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A Clinical Survey of "Transit Fever" in Bovines.*

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I have to-day the privilege of presenting to you the following paper, the text of which I have termed "Transit Fever" in Bovines. It is simply a clinical survey of a specific type of fever, or catarrhal affection, met with almost exclusively in cattle which have been transhipped from one part of the country to another; hence I think the term applied to it is quite appropriate. It might aptly be described as seasonal affection, as it occurs mainly during the end of the year from October to February, although it has been met with more or less throughout all the seasons, for the last two years at least, probably owing to the long-continued cold and wet weather which has been experienced during this period.

It is found chiefly amongst Irish and Orkney cattle, more especially in those collected from the North Isles, including stores and milk cows. Home-bred cattle, however, are not immune to it if they have been exposed to the infection during transit by rail and subsequent exposure to the contagion whilst standing at the cattle marts. The percentage of cases in home cattle, nevertheless, is not nearly so high, nor is it so fatal, probably owing to the majority of home breds being in better condition, and not so fatigued by long journeys, and thus they are more resistant to its evil effects. It does not appear to be very infective to contact cattle, but cases do occur amongst this class. I have met with several instances where the young stock bred on the farm had developed the disease after having been exposed to the infection through the medium of newly-purchased affected animals.

This disease has been known to most veterinary practitioners in Aberdeenshire, and in Central and North of Scotland generally, for some considerable time, but it has been very prevalent for the last two years, and has been the means of inflicting very heavy losses on stock owners, in the North-east of Scotland at all events. Its fatality has increased so alarmingly during the last two seasons that I think I am right in saying that, if it continues unchecked, with the same degree of intensity in future seasons, it will very seriously interfere with the marketing of this particular class of cattle. This will cause great inconvenience and loss on all those associated with this important and very extensive branch of the cattle trade, as the great majority of stock farmers purchase their winter supply of store cattle from October onwards, and depend almost entirely in obtaining them from the two main sources which I have already mentioned.

It is a very significant indication, I think, of the serious aspect of this malady, to remember that the farmers, usually a slow-moving and non-co-operative class, have already taken combined action in regard to its suppression. It is therefore imperative for the Veterinary Profession to bestir itself, and endeavour to find a curative remedy, and a method of prevention, or to be in a position to suggest measures which will prove successful in its eradication, more or less complete.

ETIOLOGY.—What may be the direct or immediate cause of the disease I am not in a position to state, but I might just here mention that the examination of several affected lungs, bacteriologically, has shown the bipolar organism *Bacillus bovisepticus* to be present almost in pure culture. What significance this will have on the production of the disease, future research will alone reveal. There are certain conditions, however, which I think must be looked upon as being undoubted predisposing factors in its causation.

(1) The first of importance in this respect is exposure to extremes of temperature.

Thus, it occurs in cattle which have been subjected to a high temperature on board ship as a result of defective ventilation and overcrowding, or in railway trucks where overpacking has taken place, more especially where the trucks have been completely covered with tarpaulin sheets, which is quite a common practice in the transit of milk cows, and their subsequent exposure to extreme cold and wet in the cattle pens or in the fields.

(2) The housing of these cattle in byres manifestly deficient in ventilation.

Stock owners appear to be slow to realise the absolute necessity of an abundance of fresh air to a class of cattle which have practically been born and bred in the open air, and, consequently, it is nothing short of suffocation for these animals to be tied up permanently, as is the almost universal custom in this part of the country, in a stuffy and vitiated atmosphere, or turned adrift in a close covered-in dung court.

(3) Debilitating causes.

Any circumstance whatever which lowers the general tone or vitality of the system must be looked upon as a contributory cause. Thus, it is frequently

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met with in stirks which are in rather poor condition, and it is very fatal in this class; again, it often attacks animals which have been badly bruised and are suffering from painful traumatic injuries, in the limbs and other parts of the body, received during transit. It attacks milk cows, particularly those which have been over-fatigued by the journey, and occurs as a secondary affection on parturition and in those diseases incidental to this act.

(4) Parasites.

Intestinal and lung worms must undoubtedly be recognised as factors, but I do not think they play anything but a subsidiary part in its production. I have examined many affected lungs and found a percentage of them with these parasites, showing that they are not universally present. I desire to emphasize this point, as I am given to understand that some practitioners look upon this affection as being verminous broncho-pneumonia, or hoose, and treat it accordingly. I think, however, that a close study of the symptoms will entirely negative this diagnosis.

Symptoms.—In the initial stages the affected animal stands with a stiff, cramped sort of posture of the limbs, the head carried low and extended forwards, the ears drooping backwards; sometimes grinding of the teeth, occasional fits of rigors, and fever, the temperature being anything from 104-108·5°; pulse much accelerated; the respirations may, or may not, however, depart materially from the normal, and at this stage there is usually constipation. Very frequently there is a muco-purulent discharge from the eyes and nostrils, and there may be an occasional emission of a short suppressed sort of cough, but often no cough exists. According to the symptoms manifested, the fever might be described as occurring in three forms:—

(*a*) A lung or pectoral form.

(*b*) An intestinal form.

(*c*) An acute catarrhal form.

The initial symptoms are, however, of a most insidious and deceptive character, so much so that owners are entirely misled and see little or nothing amiss with the animals until about the 7th or 10th day after the date of purchase, when one or more of the new arrivals present serious symptoms, and are obviously very ill. An examination of the affected animals at this stage, shows high fever, 108° and over, pulse much accelerated and of the running down type, the respirations quickened and of a laboured and painful character, the animal moaning, and salivating at the mouth. It may be recumbent and unable to rise, and may show a profuse inflammatory discharge from the bowels. One meets with cases, however, where the pectoral form alone is conspicuous, or it may be the intestinal form only that is in evidence. Cases are met with where a general catarrhal condition exists throughout, and practically affects every organ in the body, the pharynx included, the latter being manifested by the extreme readiness with which choking takes place when turnips have been given too soon after the appetite has returned.

I desire to emphasise the sudden onset of these symptoms, and the rapidly fatal termination of the attack, death taking place usually in three days. I have met so often with the disease at this period, and it presents such distinct characteristics, that it might be termed the three days' illness stage. I am sure many of us can recall cases where an animal or animals had been purchased, say, on Friday, taken home on Saturday, and observed by the owner to be not quite right on that day; the following day the symptoms have been more pronounced, and on Monday professional aid is obtained, but too late to be of any avail, death taking place that night.

The toxæmia in these acute cases seems either to be developed with great rapidity, and to be of the most virulent character, or the toxin acts in a cumulative capacity, exerting its toxic effects suddenly, when sufficient quantity has been generated in the body.

Less acutely affected cases show pyrexia, the temperature being 104° to 106°, the pulse accelerated, and, if the lungs are implicated, auscultation may reveal the usual pneumonic sounds. Sometimes, however, one finds great difficulty in making out any hepatised portion of the lung, the pneumonia being most insidious and difficult to detect. This feature is not difficult to explain, when one has made an examination of a number of lungs after death, in which case one invariably finds but a small portion of the lung substance involved in the diseased process.

Diagnosis.—Verminous broncho-pneumonia is the most likely disease to be mistaken for this affection. During life, however, the symptoms exhibited present very little similarity. In hoose, a strong, hard, expulsive type of cough is always present, while in the disease under review, coughing is not a prominent symptom; in fact, I might go further, and state that it is seldom in evidence, and when it is present it is weak, soft, and suppressed. Again, if the trachea is compressed in hoose a paroxysm of coughing is induced, whereas in this so-called "transit fever," no such thing occurs. The rapid onset of the disease, and its short and fatal course, should put one on one's guard as to its being hoose.

Treatment.—Everything depends on the case being treated in its earlier stages. Unfortunately, these cases are seldom met with at this period, the animals being usually seriously ill before one is consulted. Given a sub-acute case in its initial stage, it is imperative to provide a dry, comfortable, clean bed, with an abundance of fresh air, good nursing, and a tempting diet, and very little further treatment is then found necessary, the majority of the animals making an uninterrupted recovery.

Medicinally, in the more severe type of cases, I have so far been unfortunate in discovering a specific, and find that many of these cases do not respond to treatment in any form, and rapidly go from bad to worse. Most favourable results have been obtained by the administration of internal antiseptics, of which I put most faith in formalin, given as a drench in two to four drachm doses, or intravenously in saline solution (20-40oz.). As a matter of fact, I have tried

(I might almost in truth say, experimented with) practically every drug indicated as being likely to have an ameliorating influence on the symptoms presented, but often with little or no benefit to the patient. I have come to the belief that in the acute cases, or in those where the disease has become firmly established before being taken in hand, medicinal treatment is practically useless. In the less severe type of intestinal cases, mineral and vegetable astringents along with antiseptics give relief, but often the diarrhœa is of a most obstinate character. Latterly I have used Dimol powder in half-ounce doses in these refractory cases with very encouraging results, especially where the diarrhœa has become dysenteric in type. Many cases are, however, rendered moribund before one sees them, by the injudicious administration of large doses of magnesium sulphate, and other purgatives, by the owner.

Counter Irritation.—I do not think much, if any, benefit is derived from the application of mustard poultices to the chest, and if they are to be of any virtue at all they must be applied at the very commencement of an attack. When the tubal or hepatised sounds can be heard, they do no good, and repeated applications do harm, and should, I think, be avoided, in that they depress and irritate the animal at a stage when everything of a depressing nature should be avoided. Moreover, if the type of pneumonia is studied, all that seems indicated is the application of stimulating liniments to the front of the chest, and that portion which is approximate more or less to the elbow. I do not think, however, that such an application has much effect in easing the symptoms or hastening recovery, but it gives the attendant something to do, and it probably pleases our clients without doing direct harm to the patient.

Autopsy.—A typical case presents very constant lesions, viz., the lungs show patches of hepatisation, the lesions being confined, in the great majority of cases, to the apical lobe, with a lobular patch here and there throughout the lung substance. Sometimes, however, one finds the apical and cardiac lobes both affected, and on cross-section they give the appearance of a lobar pneumonia—as shown by the specimen on view. Sometimes the pleuræ are affected and covered with a sero-fibrinous deposit, but I have never met with a fluid exudate in the thoracic cavity.

In the abdomen one finds peritonitis and inflammatory changes in the mucous membrane of the fourth stomach and small intestines; the liver pale, often almost clay-coloured, soft and friable; the kidneys congested.

In addition to the foregoing, one meets with cases, at the abattoir, where the lungs only are affected, or the bowels show the principal lesions, and again it may be a catarrhal condition throughout the whole system in general.

Prophylaxis.—I am strongly of the opinion that much can be done to prevent the occurrence of this disease by the proper overhauling of the whole system of the transit of Irish cattle.

The shipment of these cattle should be remodelled on the principle adopted, and which has proved singularly successful, in the transit of Canadian cattle. It may be argued that cattle undertaking such short journeys as are taken by Irish cattle do not require the same comfort as is found essential to those doing a long sea voyage. With this I do not agree; I think it is very important that Irish cattle should be tied by the head, or at least a certain definite space allowed for each animal, so that they can lie down and rest.

Great numbers of these cattle are driven long journeys to and from the fair to the port of embarkation and get little time or opportunity to rest until they are hustled on board ship, to be packed into stalls so tightly that it is impossible for them to lie down and rest, or if one does loose its foothold, it cannot get up, and is trampled on by the others for the rest of the journey. The percentage of cattle bruised, and otherwise damaged in transit, has been far greater this season than ever I have previously experienced, whatever may be the reason, and strong measures are urgently required to be put in force, to end the present system adopted by the shipping companies in the transport of these animals.

(2) In addition to the prevention of overcrowding and overheating on board ship, attention should also be given to the overpacking of cattle in railway trucks, as much damage is caused thereby—in overheating, and the infliction of much unnecessary suffering through injuries to the animals.

(3) In the case of milk cows, the custom of covering over completely trucks with tarpaulin sheets, should be discontinued. It may be admissible and good practice to cover up one side of the truck when only one or two cows are carried, but when the full complement is carried this procedure is not only unnecessary, but is undoubtedly injurious.

(4) Comfortable conditions should also be provided at the lairages for the cattle, notably the provision of an abundant supply of fresh air and water, and sufficient space for the animals to lie down and rest. I would like to add another recommendation in regard to this latter point.

(5) Auction mart companies which cater for this line of cattle trade should provide suitable accommodation in the form of dry, comfortable, and airy sheds in the fields, so that the cattle can be comfortably housed at the end of their journey, in place of being turned out overnight and exposed to the rigours of the climate so prevalent here towards the end of the year.

If these prophylactic measures were adopted and rigidly enforced I venture to think they would go a long way to mitigate the evils of this disease. It is, I think, incumbent on everyone associated with the cattle trade to do everything possible to ensure the farmer or stock-owner in obtaining what he imagines he is purchasing, but too frequently does not get, namely, healthy and sound animals.

(1) In addition to the foregoing, the importance of calling in the assistance of their veterinary surgeon

at the earliest possible moment, cannot be too strongly emphasised on purchasers of Irish and Orkney cattle; in fact, I am of the opinion that if these cattle were examined at the time of purchase, or soon after their arrival at their destination, and the affected animals thus detected and isolated, the percentages of losses would be very much smaller, and the infection would be prevented from spreading to susceptible in-contact cattle.

(2) Newly-purchased Irish and Orkney cattle should be turned out every day, if the weather is at all favourable, and when taken home should be given for the first fourteen days at least an airy shed, free from draughts, with a dry comfortable bed, and not be tied up permanently in a hot and badly-ventilated byre, as too often is the case.

(3) Attention should be given to the condition of the stomach and bowels, but the administration of purgative doses of medicine should be rigidly avoided, as very often recovery is rendered hopeless by the injudicious administration of cattle salts and other purgative medicines.

These are the more salient features associated with this catarrhal affection in bovines, as I have met it, and I express the hope that, before another season, scientific investigation will have been instituted, and that a protective remedy will have been found, which will lessen, if not entirely eradicate, the mortality caused by this malady amongst susceptible animals, and thus provide another milestone on the path of veterinary progress against the prevention of animal disease.

Discussion.

Mr. D. Cumming said he had been acquainted with the disease for about twenty years. When it was "new," as they then regarded it, it was more virulent and contagious than at the present moment. One of his first cases was in an Orkney cow which was taken ill when brought home after purchase. She was discharging from the eyes and showing other symptoms of the disease, and very soon died. The whole of the cattle afterwards fell ill. A yearling tied up beside the cow that died had been turned loose in a court among the others. He was struck by the name Mr. Hepburn gave the disease—"transit fever." He himself had termed it infectious or contagious broncho-pneumonia. Was it a specific disease that affected cattle that were fatigued by journeying and exposed to different temperatures? It was not nearly so prevalent among cattle standing at home, so he was inclined to think that transit was a pre-disposing cause. With regard to the treatment of these cattle in general, he recommended their being put into a cart shed and kept there for three weeks. In every case where that had been done he had found there had been very little further trouble. In some cases the cough was very little in evidence, and in other cases, especially in younger animals, he had found them coughing on steadily. He could quite well understand anyone, who had not a great deal of experience, thinking it was a case of hoose infection he was meeting. The first thing to do, especially in the early stages, was to give a laxative—an internal antiseptic. Were that done, they would often find that by next morning the temperature had fallen. Contrary to Mr. Hepburn's experience, he had found that a counter-irritation of the chest had proved successful, but not in advanced stages, of course. He agreed wth all Mr. Hepburn had said in urging that improvement must be made in the conditions of transit of the animals. Under the conditions which they encountered it was surprising that so few animals died after being packed into a boat, having a rough passage in a vitiated atmosphere, and heated by steam, then put into a field or cattle sale, standing about, driven miles again home, or conveyed in trucks, and then turned into a hot stuffy byre.

Mr. A. Kerr said that Mr. Hepburn had remarked that the trouble was so serious that the farmers in Aberdeenshire had taken combined action about it. He presumed that by this was meant that they sent away to the Ministry of Agriculture, who knew nothing about it. He thought it would have been better that the farmers should have come and consulted with the veterinary surgeons and taken action with them. A most peculiar individual was the Aberdeenshire farmer—if he thought he would get something for nothing he would apply to the Ministry of Agriculture. What was the normal habitat of the *B. bovisepticus*? If the disease was due to this organism he presumed the disease was a septicæmia. He treated it, accordingly, with an internal antiseptic. No doubt predisposing causes were exposure to cold, and the housing of animals in a stuffy place, the animals being in a debilitated condition. He agreed that if they got the lung form by itself they could cure the disease, but if they got bowel and lung trouble combined and profuse diarrhœa it was very difficult to cure. What he did with his clients was this: whenever they bought Irish or Orkney cattle they had their temperatures taken once a day, and whenever they were found to be above normal, treatment was started at that stage. He related how, on being called in by a certain farmer to see some stirks he had bought in Aberdeen, he (Mr. Kerr) found one of the animals with a temperature of 107, and swaying about from side to side, dying. He was assured that the other fifteen animals about the place were all right, but found on investigation that eight were standing with temperatures up to 106. He said: "This is the time to begin to treat them." The farmer said: "Wait a day or two: another one is dying, and you'll get it removed too." But all the eight, taken in time, got better. He was certain, speaking generally, that if animals were treated at an early stage, good would result. It was a most treacherous disease, and as long as they could eat and chew the cud the farmer thought they were all right. He had got some of his clients schooled-up to take the animals' temperatures for three or four weeks after they came home. There was no doubt that home-bred cattle responded more readily to treatment simply because they were in better condition. While Mr. Hepburn had deprecated blistering, he (Mr. Kerr) did think that a little rub round about the region of the heart did good. This season he had had fewer deaths than previously simply because he treated the animals with an internal antiseptic. But if the disease was a septicæmia and due to a specific organism, he thought the treatment would be serum or vaccine treatment. It was for Mr. Jackson Young's department to find out what the organism was, and get the serum prepared by the Ministry of Agriculture.

Mr. Drennan said that for the last two years in particular the disease had been very prevalent round about. He had had a larger number of cases during that period than ever before. That, he thought, was due to the wet season. It was most common in the animals that had come from Ireland or Orkney. He was of opinion it was a septicæmia, but the origin or nature of the bacillus he did not know. He had no belief whatever in the application of stimulants to the chest. He held that the best remedy was plenty of warm clothing, comfortable bedding, plenty of heat, and internal antiseptics. If the animal's system was weakened by indiscriminate purgatives, one was liable to aggravate the bowel lesions. The disease had been very bad this season among home animals. Their cough was bad, but fortunately he had very few deaths among them because he got most of his cases at an early stage. He treated it as broncho-pneumonia, with good results. He did not examine the lungs to see if there were any parasites present or not. He had, however, a strong belief that "transit fever" was due to

the *Bacillus bovisepticus*. If it were a septicæmia he thought the serum treatment of the disease was what they had to look forward to.

Mr. CRABB informed the meeting that there was a lot of trouble in his district, especially in the Irish dairy cows sold to dairymen and farmers. Once they fell ill, the animals were not many days before they died. Many lawsuits were arising. The Irishmen were going to "pull up" the buyers who refused to pay for animals that they bought, and which almost immediately died. Were he a farmer he would refuse to pay for a cow which he never had in his possession. Of three Irish cows which were bought at a Turriff mart on a Tuesday, and went to farms round about, two died on the Thursday and one on the Friday. One farmer got £8 or £10 back, but he did not know what loss the other two suffered. These cows were guaranteed correct in every way. If they were not correct, who was the responsible party? They had had little or no trouble with the Orkney cattle, but a lot of it in connection with the young Irish cattle. He had known of a dozen of them bad upon one farm, and usually several were dead before a veterinary surgeon could go and see them.

Mr. G. HOWIE thanked Mr. Hepburn for his very excellent paper on that terrible disease. He was in perfect agreement with the whole of it, but he would like to attack the other end of the subject. The treatment they knew about, but there must be some reason for the causation of the disease. Very few of them had had trouble with animals coming all the way from Canada in ships, but they had an enormous amount of trouble with animals coming the short distance from Ireland and Orkney. There must be something wrong, he thought, with the ships bringing the cattle from Ireland to this country. They could not be the same class of boats as brought the cattle from Canada. He thought it was for them to push forward some inquiry as to the state of the vessels bringing cattle from Ireland to Glasgow and other ports. The Society for the Prevention of Cruelty to Animals took up the supervision of the export of worn-out horses from this country to the Continent. They had managed to improve matters to a great extent in connection with the shipping of these old animals. If the Prevention of Cruelty Society could be induced to take up the matter of the importation of Irish cattle they might be doing a great deal more good than by looking after old worn-out horses. He suggested that an account of their discussion should be sent to such bodies and centres as it might be possible to interest in the matter. It was for the Ministry of Agriculture to do something. He was of opinion that the source of the disease must be in the boats or in the railway trucks after the cattle left Ireland.

Mr. J. ANDERSON was very much of opinion that something ought to be done to, in some way, eradicate the possibility of infection. It was peculiar that they had no experience of the disease occurring in Canadian cattle. The effects of transport might be entirely the cause of these animals suffering from the trouble. He cited a case where twenty calves bought in the Ballindalloch district in September were removed to a farm near the coast. After being for almost a month in a fold and in the fields there, the farmer discovered that two or three of the animals had developed temperatures. On examination, two were found to be showing evidence of this particular fever, and about to die. Another two or three were showing evidence of the disease, but in less virulent form. The temperatures were taken of the other cattle, which were turned into a loose feeding place, and of that lot four or five died. But these animals had been put into a clean fold emptied of manure, and it was to be thought no infection could have been caused from that source, yet it seemed that this fold had secreted an organism responsible for the disease. He could understand that some of the boats carrying cattle must be very filthy, but this was a case occurring in home-bred cattle in good condition. It was a mysterious business. He did not think there was much to confuse between transit fever and hoose in average cases, because they did not usually get that persistent cough in "transit fever" that was found in hoose, and in any *post-mortems* of the latter which he had made he never found any parasites in the lungs. He came across one cow which for a period of six weeks had a temperature from 104 to 107. It seemed to him that that cow could scarcely have lived, and it was nothing which she got that accounted for her living. If the disease were a septicæmia one would hardly expect a temperature of 107 to remain for six weeks. Early treatment was certainly a most important factor in dealing with the condition. He suggested that a proposal should go forward from that association that something should be done whereby the conditions under which these cattle travelled might be inquired into.

Mr. MCVEAN said he was glad to state that he had never seen a single case of "transit fever" in his district. He recalled similar cases of broncho-pneumonia among horses being transported from Hungary and the Argentine during the South African war. Such was the mortality occurring from broncho-pneumonia that the officers were given a bounty if they landed 95 per cent. of the animals alive. The trouble was caused by the impure air the horses breathed and the conditions they lived under. Would not the exciting cause of "transit fever" in cattle be the changed climatic conditions they experienced, and their weak condition, following fatigue and travelling conditions? Referring to the calves brought from Ballindalloch district to the coast—spoken of by Mr. Anderson—he asked if it was known whether the disease had a long incubation period or were the animals infected in the railway trucks?

Mr. CLARK asked if the same condition was found in Orkney cattle as in Irish. Irish cattle often had lungs and bowels attacked at the same time. Had any trouble been experienced with Orkney cattle with regard to the bowel? He agreed that there should be early examination of the cattle after landing, for animals might be chewing the cud and yet have a temperature of about 106. He had great belief in giving them a good dose of mustard laid upon the chest.

Mr. J. MCALLAN, veterinary inspector for the City of Aberdeen, said most of the cases he had seen had been confined to *post-mortem* examinations in slaughter-houses. "Transit fever" was not a new disease, thank goodness; they had enough diseases, and he would not like to think it was a specific new disease. Mr. Hepburn had enumerated the contributory causes of the trouble. The various sojournings through which Irish cattle had to go before they reached Aberdeen must, he thought, be of very vital importance. Yet, he was going to say a word in support of Mr. W. Jackson Young and the Ministry. They must all realise that the conditions of transport of animals during the last few years had very greatly improved. He was certain that the Ministry did not permit overcrowding on board ship or in railway wagons. For some time past it had insisted upon a very thorough system of disinfection of all railway wagons carrying live stock. He could not reconcile the suggestion that railway trucks were contributory causes, with the great improvements that had taken place with regard to the transport of animals. What had struck him about most cases sent in for post-mortem examination as lung cases was the remarkably small area of lung affected, and the amount of suffering apparently caused in these animals. One would scarcely expect the distress which was said to be there. With regard to the disease being a septicæmia, he was in a difficulty there again, because he found that the flesh of most of these animals was very good on cutting. He found no softness or discoloration. That would rather do away with the idea of the disease being a septicæmia pure and simple. He considered that Mr. Hepburn had done a great service in bringing up the subject so fully. He found he could pass most of those carcases at the slaughter-house.

Mr. KERR said his experience was that animals with "transit fever" had a very high temperature all along, and he could not see how the flesh could be good.

Mr. McAllan remarked he did not know the previous history of the animals whose carcases he inspected at the slaughter-house. He had simply to judge the carcases on their merits. He could only condemn a very small per centage of the cases he saw.

Mr. Kerr: I cannot see how fevered meat can set.

Mr. McAllan: It does set, and it is with great regret that I have to pass a lot of these carcases. He added that he thought there would be more evidence in the carcases were "transit fever" a septicæmia.

Mr. Gofton, Edinburgh, president of the N.V.M.A.' said the subject was one about which he knew almost nothing. He had not, to his knowledge, seen a single case of this disease. It was only recently that he had learned that Aberdeenshire and district was affected with the amount of trouble to which this particular condition had given rise. He was very grateful to Mr. Hepburn for the excellent way he had set forth his descripton, and for the information he had given. He wished to put several points, not in a spirit of criticism, but of inquiry. Mr. Hepburn, Mr. McVean, and himself, he recalled, were engaged during the South African war in the transport of horses, and their greatest trouble was from what they termed ship's pneumonia. No matter what the weather conditions or the sea were like, that never occurred among horses on the upper deck. It was those on the lower decks which suffered. When they were travelling with a tail wind behind them they were unable to get air into the lower decks, and the trouble which followed was attributable to the stuffy, vitiated atmosphere resulting from lack of ventilation. He suggested that there might possibly be some factors of local influence, which, to some degree at least, were responsible for the causation of "transit fever" in cattle. So far as he knew, there was nothing like the same amount of trouble in other districts which they apparently had in Aberdeenshire. Yet the conditions to which Irish cattle were subjected prior to their arrival in Aberdeen, could not differ very much from those applicable to Irish cattle arriving at other centres. He admitted, however, that the market conditions showed great variation. In some cases the accommodation provided for animals awaiting exposure for sale was open to adverse criticism. He had not seen in Irish animals leaving the Edinburgh markets any evidence of adverse influences operating on them up to that time. The disease apparently appeared in the autumn at the time farmers were stocking-up for court or byre feeding. If the disease occurred at all in the spring, when the cattle purchased went straight to pasture, it did not seem to attract the same degree of attention. When they considered the open conditions under which the animals were living prior to their arrival in this country, they were in striking contrast with the stuffy, close byres described by Mr. Hepburn in which the cattle were housed after reaching their ultimate destination. A close analogy appeared to exist between the byre conditions and those obtaining on the lower decks of the ships to which reference had been made. What the cattle wanted was, at the most, shelter from extreme weather. As long as they got that he thought their needs, as far as housing went, would be met. It seemed reasonable to suggest that housing conditions which prevailed after the animals arrived at their ultimate destination in Aberdeenshire contributed in some considerable degree to the causation of the disease. Speaking of septicæmic carcases he said that when dressed in the ordinary way by the butcher they were often very excellent carcases so far as appearances were concerned.

Prof. Gofton asked if anyone could give any indication of the distribution of "transit fever."

Mr. W. Jackson Young said it was prevalent only from Perth and Forfar northwards.

Mr. Cumming: In these parts of the country most of the store cattle are in close byres.

Mr. Howie said it might be found, as a result of that discussion, that the cause of the trouble might not in the long run be attributable to the boats or cattle trucks, but to the housing accommodation of the district. In a great many cases the housing arrangements for cattle were of a comfortable kind. That was indicated by a large number of their breeders opening up their byres, lighting and ventilating them well. The object, with breeders of pure cattle, was of course to have healthy calves that would pass the tuberculin test. What applied to pure-bred cattle applied equally to imported store cattle. But he must admit having known of a large number of calves being taken home and at once tied up in a byre along with twenty or thirty others. These animals, accustomed to open-air life and conditions, were breathing the same stale atmosphere as the other animals. It was possible that the home conditions might have as much to do with the disease as their transit.

Mr. M Allan said they should give it out that they recommended that people buying these imported cattle from Ireland and Orkney at marts should gradually break-in the animals to the ways of living here. They should not immediately close them up in the byres, but give them a certain amount of protection and keep them out as much as possible. The general opinion seemed to be that the housing conditions had a good deal to do with the trouble experienced.

Mr. Brennan: A big percentage of the cases develop immediately they arrive, before they have ever seen the byres.

Mr. W. Jackson Young stated that farmers in the Northern Counties of Scotland arranged to hold a conference on the prevalence of lung trouble in cattle after their arrival from Ireland and Orkney. The Ministry of Agriculture instructed him to attend the conference that was held at the Highland Show, Perth, last July.

He was at a loss for a suitable reply to the criticisms that were levelled at the Ministry concerning the methods of transport of animals. As it so happened, what he did say at that meeting was absolutely in conformity with the views expressed that day.

He informed the National Farmers' Union that he considered a lot of the trouble was caused by the farmers placing animals in unsuitable places after transit, and a great amount of harm followed the administration of purgatives. He was quite relieved in his mind that he was not far out when the farmers were so informed. Some of the remarks in that day's discussion had been rather critical towards the methods of transport. It was evident that the speakers had overloooked the fact that the supervision of the transport of animals was very much in the hands of the veterinary profession.

Before a ship was passed for the carriage of animals it had to be inspected by an Inspector who was a veterinary surgeon, who reported to the Ministry. Attention was drawn to a plan of a fairly good cattle carrying ship, and the system of ventilation by means of ordinary and mechanical ventilators was explained. Mr. Hepburn had been approached by him to prepare a paper for this meeting and readily consented. The notes on prophylaxis were most interesting and it was observed that a proper overhauling of the system of transport was advocated. He would be very pleased to have concrete examples of what reforms were considered necessary. They were living in a humane age, and the provisions of the Animals (Transit and General) Order of 1912 proved that. That Order was administered by the local authorities, so when they were blaming people for overcrowding railway trucks and vessels, they were really blaming local authorities and the veterinary inspectors.

Mr. Young read the provisions of the Order pertaining to Ventilation, Securing of Bulls and Fat Cattle, and Overcrowding and remarked on the simplicity of the language used. Port holes as a means of ventilation could be disregarded, as they required to be closed in stormy weather.

Vessels carrying cattle from Ireland were inspected regularly and he had made many trips on such vessels and examined the stock during transit. On one occasion when sailing from Dundalk to Liverpool he found the fat cattle were not tied, and the Master of the vessel was fined.

He did not approve of the tying of all classes of cattle and could foresee accidents happening to young store cattle that had never been tied. The great test of the ventilation of a vessel was the condition of the animals when landed. If the animals were very distressed after landing and showed signs of sea sickness, they were detained for a longer period than ten hours. Having been a portal inspector for seven years he had paid considerable attention to this matter. About thirty years ago two departmental committees discussed the transport of animals by land and sea. He had read the reports and minutes of evidence and witness after witness gave evidence that at that time "Ammonia blindness" was common. To-day it was unknown, and he attributed its absence to the good ventilation of the vessels. They ought to direct enquiry into the factors that influence the virulence of micro-organisms, as it was a very interesting subject. The conditions of transport, he admitted, might be factors which increased virulence. He was not in possession of knowledge as to whether *B. bovisepticus* was a facultative or an obligatory parasite. It seemed to him that when there was infection in a herd serum treatment was indicated. The farmers were quite right in informing the Ministry of their losses.

Mr. Young also pointed out that the Veterinary Colleges in Great Britain and Ireland were situated at ports, and that when he was a student he had not been shown over a live stock carrying vessel. The anatomy of a ship took some learning as the nomenclature used on the Clyde, Tyne and Thames was different. He considered students should receive some instruction on the subject.

Mr. YOUNG: Would Mr. Hepburn tell us in his reply if all the cases emanate from one mart in Aberdeen or from one shed in that mart?

The CHAIRMAN said they must be very pleased and satisfied at the discussion they had had.

MR. HEPBURN'S REPLY.

Mr. HEPBURN, replying to the discussion, said he was very grateful for the hearty manner in which it had been undertaken. The disease was undoubtedly a serious matter in that part of the country. The £2,000 loss to stockowners by the disease, mentioned by Mr. Young, did not represent anything like the total sum, probably not more than a half. He knew many farmers who had not notified the Farmer's Union of their losses, and there was also the case of the dealers. One Irish dealer and seller lost three cows worth £123 in one week, and similar instances could be quoted time and again. It would be a serious matter if something was not done by those in authority to try to eliminate the disease. He certainly agreed that bad ventilation had a very great deal to do with its production.

Someone had said that the cattle were not infected until they reached the farms, and hinted that the whole of the trouble originated there. This was contrary to fact, as in many cases the cattle had scarcely smelt the inside of the byres, so to speak, until they fell ill or died. Quite recently he had experience of some cattle—home-breds—from the Alford district, noted for the breeding of cattle of hardy constitution, and which had been sent to a mart in Aberdeen and sold. Three became affected with the disease after their arrival at the farm, where they had been housed under the most perfect conditions possible. Infection in this case must have taken place, either in transit by rail to Aberdeen, or in the mart. This case illustrated that they could not put all the trouble at the door of the farmer. Undoubtedly, however, there was a word to be said to farmers regarding the housing of these cattle in this part of the country. He was very reluctant to disagree with Mr. Young, but felt he must say this—it was all very well for the Ministry of Agriculture to make Orders, but did the Ministry's officials see that they were always enforced?

A ship might be limited to carry say 400 cattle, but at times as many as 600 might be crowded aboard, and packed like herrings in a barrel, and one could readily understand the unfavourable condition under which such a cargo was carried.

Regarding the Orkney cattle, he found, on making inquiries, that it was amongst the cattle collected from the North Isles, and which were shipped, packed tightly together, in small steamers, that the disease most frequently occurred.

If the infection in North Isle Orkney cattle was due to badly ventilated little steamers—if this was proved and admitted—could not the same be applicable to the bigger ships, when overcrowded, dealing with the Irish trade? Mr. Young said it would be impossible to tie up Irish Store Cattle; he (Mr. Hepburn), did not see how that should be, seeing that Orkney cattle were all tied by the head, in any case the cattle should get sufficient space, so that they could lie down and rest.

The Irish dealers were just as anxious as farmers in that country to have matters remedied. He believed there was a movement on foot in Ireland to have a rival steamship company put in force. Those responsible for shipping Irish cattle at present would not listen to reason. They simply said "Here is your boat," and the dealer had to grin and bear it. There were those who thought that most of the trouble arose among the cattle huddled round about the engine room, where the atmosphere became very hot, stuffy and vitiated, but those stalled fore and aft, where there was plenty of fresh air, were all right. He did not doubt that the orders of the Ministry to the shipping companies were adequately framed, but could they be certain that they were being properly administered by those companies?

Regarding railway transport of cattle, he said it was an inhumane method of treatment to pack animals so closely as they sometimes were in trucks, and the number of cattle seriously damaged this season showed that something was required to be done to remedy matters, in the interest of the animals themselves as well as that of the owners. Also, he agreed that the R.S.P.C.A. should devote its attention to the conditions under which cattle journeyed, and that association might make a recommendation to the railway company on the subject. In-calf cows were carried too near the drop of calving, and many of them arrived at the mart in an exhausted condition, and calved soon afterwards, their impaired vitality rendering them prone to develop the disease.

Prof. Gofton and Mr. McVean referred to a form of pneumonia, viz., ship pneumonia, which attacked horses in transport to South Africa, and as one who had had experience of this fatal malady, he agreed that there was a close analogy to the disease that affected Irish and Orkney cattle. It was in these parts of the ship in which they could not get proper ventilation that the trouble began.

Mr. Clark mentioned that he only met with the lung form of the disease in Orkney cattle. The intestinal form, however, was found both in Orkney cattle and in home-breds.

It had been suggested that the disease was a septicæmia, and with that view Mr. Hepburn was not prepared to disagree, as, in many instances, it had assumed septicæmic characteristics. The flesh of those animals sent, in the earlier stages of the disease, to the slaughter house, seemed rather to negative this idea, however, as the flesh was of good colour and set well.

Regarding the point raised by Mr. Crabb, in Aberdeen no full warranty was given with these imported milk cows, the warranty being a specific one only, namely: cleansed, and correct in teats. In all other respects the purchaser was supposed to have satisfied himself as to the general condition of the animal. He did think, however, that they as veterinary surgeons should do everything in their power to safeguard purchasers of these cows, and see that they got what they were supposed to be buying, namely, a healthy cow, and farmers would save themselves many heart burnings if they would only consult them more freely.

In answer to Mr. Young, he might say that all the Aberdeen marts handling that trade were affected, there was no mart more than another implicated. The trouble got so serious last year that one of the marts took the question up, and for a time he examined the cattle as they arrived at the mart, and had all affected animals detained

and treated until the fever subsided. This precaution seemed to have the desired effect in preventing further losses, and complaints ceased. It was astonishing how long the fever would continue, the temperature might stand at 107 degrees for a fortnight. If the animals were taken in hand early and put under proper conditions the loss was very slight indeed. On the other hand, if they were taken to the farm and put into stuffy byres, that undoubtedly was a very strong factor in the production of the disease.

An important preventive measure for which they should press was the provision of shelters in the fields for the cattle, as they arrived here. Recently one or two dealers provided themselves with shelters for their cattle at their own expense. Since then they had lost comparatively few animals, and there had been very little complaint from the farmers.

A resolution might be passed at that meeting that the marts catering for Irish and Orkney cattle trade should put up roofed shelters into which the animals could go overnight, and rest comfortably, and also be provided with facilities for feeding. To the farmers they should urge very strongly that they should mete out special treatment to these cattle for the first fortnight or three weeks after arrival, to get them acclimatised.

He hoped Mr. Young would do his best to see to any discrepancies there might be regarding the shipping and transport, generally, of cattle.

Glasgow Veterinary College.

Secretary for Scotland's Reply to Deputation.

The London correspondent of the *Glasgow Herald* supplies that paper (of 28th February) with the following account of the reception by the Secretary for Scotland of the deputation to which reference was made in last Saturday's issue of the *Record*:

"In connection with the movement for the continuance and maintenance of the Glasgow Veterinary College as a teaching institution a deputation consisting of Professor Glaister, chairman of the College, and Messrs. Hugh Begg and Archibald MacNeilage, governors of the College, accompanied by Dr. A. W. Whitehouse, principal, and Mrs. James Austin, secretary, met Sir John Gilmour, the Secretary for Scotland, at the Scottish Office this afternoon. The deputation was introduced by Mr. Stephen Mitchell, M.P., supported by the following members of Parliament: Sir William Alexander, Mr. J. B. Couper, Major Broun Lindsay, Mr. James Maxton, Mr. Buchanan, Mr. Wright, the Rev. Campbell Stephen, Major Macandrew, Mr. Duncan Graham, and Mr. David Kirkwood.

Glasgow's Position.

"Professor Glaister explained the position of the College and its desires, emphasising the policy of the Board of Agriculture towards the College. From 1916-17 till 1922-23 the amount given by the Board as annual maintenance of the College was £400. In 1920-21, to meet the increased cost of living, an additional £300 was allotted as a bonus for distribution among the Professors and lecturers. In 1922-23 the annual maintenance grant was raised to £600, which, with the bonus, made that year's total £900. On the ordinary working of the College in the same year there was a credit balance of £92. The bulk of the £900 went for salaries to certain professors. In 1920 the Scottish Board of Agriculture stated that they had been authorised to give an assurance that the College would be maintained as a teaching institution, and the Highland and Agricultural Society made a grant of £500 to the College consequent upon that assurance. The governors meantime had not felt warranted in placing their appeal before the public. On February 10, 1923, however, the Board of Agriculture intimated that they had decided that one well-equipped Veterinary College was sufficient for the needs of veterinary students in Scotland, and suggested amalgamation with the Royal (Dick) College on the footing that veterinary education in Scotland should be given exclusively at the latter College. Later the Scottish Board intimated that they would be unable to make any contribution towards the expenditure of the Glasgow College respecting the period after March 31, 1925.

"The position of the deputation, continued Professor Glaister, was that the creation of a monopoly of the teaching of veterinary science in Edinburgh would decentralise the Glasgow institution, which had been in existence for 65 years. The numbers of students for the past few years in Glasgow had been greater than in pre-war days. The numbers and qualities of those passing the examinations of the Royal College of Veterinary Surgeons at least equalled any other veterinary school in the country. They could see no cogent reason for decentralising the Glasgow College. Glasgow, they submitted, was entitled to her fair share of public moneys given for public education. Glasgow and Lanarkshire alone contained more than one-fourth of the entire population of Scotland, and the city itself formed the centre of large agrarian areas. The area served by the College contained at least one-half of the entire population of Scotland, one-fifth of the square mileage of the country, and great live stock, including 2,500,000 sheep, 400,000 head of cattle, 450,000 horses.

Sir J. Gilmour's Reply.

"Sir John Gilmour replied after the members of Parliament had spoken in favour of the deputation. He stated that while he represented a Glasgow constituency and had a genuine interest in agriculture, he could not hold out any hope of an alteration of the decision that had been come to. It had been arrived at after due consideration and notice of decision to terminate the grants had been duly given to the governors. Accordingly, while he was interested in any effort for improving the veterinary position in the country, he was of opinion that there should be concentration of purpose and of finance. He thought that Scotland was too small to support more than one institution for teaching veterinary science. He could, therefore, hold out no hope of any alteration of the decision.

"Professor Glaister inquired whether the governors must therefore take it that they were to carry on the College at their own expense after March 31 until the end of the teaching session in July, in accordance with their contract with the students.

Sir John Gilmour replied that he was thrown back on the question of finance, but if he were supplied with some opinion as to the cost of carrying on the College until July he would give the matter his consideration.

Question of other Grants.

"Mr. Maxton, M.P., asked Sir John if the withholding of the State grant meant that the Glasgow College would cease to be the Central institution, since that would raise a very serious question regarding the continuance of the College of £860 in grants given by the Corporation of Glasgow and by County Councils and Education Authorities in the West and other parts of Scotland.

"Sir John Gilmour replied that this question had not been fully considered.

"Mr. MacNeilage proposed a vote of thanks to the Secretary for Scotland, and the deputation withdrew."

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The Question in the Commons.

In the House of Commons, on March 4th, on the motion for the adjournment,

Mr. Maxton protested against the action of the Scottish Office in intimating that the Glasgow Veterinary College should cease to have any grants from national sources within the next few months. That policy, he said, would mean that Glasgow would cease to have its veterinary college. That decision was not likely to be accepted quietly. (Hear, hear.) To tell them that Edinburgh was to be the sole and only centre of agricultural education was an unbearable stigma upon the West of Scotland. (Hear, hear.) It was only a question of a few hundred pounds that was involved. One of the main problems that the Government had to solve within the next few years was how to get back part of the industrial population to the land. If the right hon. gentleman was going to do that they must have the best centres of agricultural education in the urban areas. But for the sake of a few hundred pounds the right hon. gentleman was now going to withdraw from Glasgow an institution which had an honourable record for many years past. Practically every Local Authority in the West of Scotland was united in the opinion that this College should be maintained and the Government grant kept up. (Cheers.)

Sir William Alexander (Glasgow, Central), in a maiden speech, endorsed the appeal made by Mr. Maxton. He said that the work that had been carried out at the Glasgow Veterinary College had been really concrete and really in the interests of the West of Scotland. In the West this College catered for half of the total population of Scotland. If a veterinary college was not necessary in Glasgow, then it was not necessary in Edinburgh. (Cheers.) Centralisation when the elements were opportune was undoubtedly good, but when they considered that they proposed to centralise in Edinburgh this college and this organisation for the development of veterinary education far removed from the centre where cattle came in in the greatest numbers he had no hesitation in saying that decentralisation was the best principle in this case. (Cheers.)

The Secretary for Scotland said this was a question which interested not only the West of Scotland, but the whole of Scotland. It was largely because of this fact that the decision that had been taken by a previous Secretary for Scotland—not Mr. Adamson (laughter)—had been arrived at. It was never a very easy task, and often a distasteful one, to say "No" to one's friends. He had received a deputation recently on this subject, and the decision arrived at and intimated to the Glasgow College two years ago could not now be departed from. Those of them who were interested in agriculture were deeply concerned about veterinary education. It was essential that it should be of the best; and as in England and Wales, only one college received direct Government support, and the same in Ireland, so he feared it must be in Scotland. He did not take the view that this would infringe or cause harm to the agricultural interest, nor put an end to the activities of the College as an Agricultural College, and, as far as he was concerned, he was willing to assist and help them in pursuance of the proper agricultural education. As far as he was aware, the Glasgow College would in no way cease to be a central institution. If Local Authorities or Education Authorities desired to give support to this college, they would be at liberty to do so. He was afraid he could add nothing to the reply he gave to the deputation, except that he was awaiting a report they had promised him regarding the gap between the end of the year and the end of the Glasgow College year.

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Royal (Dick) Veterinary College.

Mr. J. B. Couper (Maryhill) asked the Secretary for Scotland what was the amount of grant paid annually by the Scottish Board of Agriculture to the Royal (Dick) Veterinary College, Edinburgh, and whether it would be affected by the decision to withdraw the annual grant from the Glasgow Veterinary College.

The Secretary for Scotland writes:—The annual grant paid to the Royal (Dick) Veterinary College by the Board is £4,000, or such smaller sum as will meet the deficit on the maintenance of the College. The grant sanctioned for the current year is £3,722. The reply to the second part of the question is in the negative.

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Lanark County Council, at a meeting in Glasgow, agreed, on the motion of Mr. James Whyte, to co-operate with the governors of the Glasgow Veterinary College in any public movement having as its object the maintenance and improvement of the College, the continuance of whose work is threatened by the withdrawal of Government grants.

The Lanark Council is one of the public bodies which have also made grants to the College, and Mr. Whyte represents it on the governing body of the College. Mr. Whyte reminded members that the grant of £600 hitherto received for the work of the College from the Board of Agriculture would cease at the end of this month, and that

the governors intended to hold a meeting shortly to stimulate public interest in the College and its maintenance, and to take other steps to ensure that its work, if possible, will be continued. Students from adjoining counties, he said, were able to attend the Glasgow College and live at home, whereas if they attended the Edinburgh College, which the Board of Agriculture apparently thought should be the only one in Scotland, they would have to pay for lodgings, and the expenses of many veterinary students from the Glasgow district would therefore be greatly increased. At the present time there were eighty-five students at the Glasgow College, of whom sixteen came from Lanarkshire. They could not find out what the Edinburgh College received in Government grants, but it was a very large sum compared with the grant of £600 which was now to be refused to the Glasgow College.

Mr. William Paterson, who seconded, said Glasgow was being rather roughly treated in this matter. He understood that Sir John Gilmour, the Secretary for Scotland, would probably attend the meeting to which Mr. Whyte had referred, and perhaps they would then have some more explicit information about the matter.

Mr. John Findlay remarked that the Glasgow College had done good work in the past, and it should be allowed to continue that work irrespective of anything that was done in Edinburgh.

The motion was approved unanimously.

Foot-and-Mouth Disease!

Slaughter Policy Defended.

Committee's Report.

The report of the Departmental Committee appointed by the Minister of Agriculture to consider the outbreak of foot-and-mouth disease which occurred in 1923-24 has been issued as a White Paper (Cmd. 2,350), price 1s. 6d. net.

The Committee, of which Captain E. G. Pretyman was chairman, in a preface to their report, state that the disease is not usually fatal to the animals attacked, as the proportion of deaths does not normally exceed 3 per cent. in the case of cattle, with a rather higher figure amongst sheep and pigs. It is frequently urged that the disease is curable, that its effects are transitory, that animals treated with this or that specific have recovered, that in the outbreaks which occurred some half a century ago, when no restrictions were enforced, losses were few—the assumption underlying all these propositions being that it is unnecessary to impose irksome and costly restrictions, and to slaughter animals in order to combat a curable disease. This is obviously true, and it is still more obvious that it cannot be profitable to slaughter an animal to save its life, and that if only individual animals which had contracted foot-and-mouth disease were being dealt with, a very different policy would be indicated.

"The real trouble with foot-and-mouth disease," the Committee add, "is not its deadliness but its extraordinary infectivity, and they did not have to consider its effect on the animals actually attacked but on the whole flocks and herds of the United Kingdom as a whole. Movement, both human and animal, was now much more extended than it used to be, and infection would constantly be carried from one part of the kingdom to another. Unfortunately, a diseased animal only had a very short immunity against another attack, and, although the actual losses by death might not in themselves be disastrous if once foot-and-mouth disease were allowed to become endemic, the total losses which would be suffered by breeders and dairy farmers would be gigantic, and all stock-owners would be faced with a constant and recurring menace, to say nothing of the effect on our export of pedigree stock, which was of such high importance to the meat and wool trade of the world. Looked at from this standpoint, it would easily be seen that the object of the slaughter policy was not to cure the animals affected, but to prevent the disease from spreading; or, in other words, they were not out to treat sick animals but to preserve healthy ones. It was for this purpose that restrictions were imposed, and for this purpose that slaughter was authorized and heavy burdens borne by the taxpayers in the form of compensation.

"Until the pathology of foot-and-mouth disease is better understood, no other policy seems practicable, nor is there any conceivable means of avoiding those primary outbreaks which are apparently airborne, so that the enemy is within our gates before we are aware of him. Primary outbreaks are most likely to occur when foot-and-mouth disease is very prevalent in the Continent of Europe and in South America, and we can only take measures to limit and suppress such outbreaks at the earliest possible moment, and with the least possible cost in money and inconvenience."

The Committee, in their conclusions, state that a policy of isolation would be equivalent to the abandonment of any hope of eradicating the disease from the country. They do not consider that a system of isolation which involved the partial or complete segregation of human beings would be tolerated as a measure connected with animal diseases. The failure of 1923 was due to the faulty manner in which the policy was prosecuted, rather than to any defect in the policy itself. If the real seriousness of the situation had been realised at an earlier stage, and the same measures taken which were afterwards adopted, much loss and expenditure would have been avoided. The indifference of owners to the importance of prompt reporting was the most fruitful cause of the spread of disease, and the most difficult one to provide against. The responsibility for final diagnosis should remain entirely with the Ministry, which should also be responsible for disinfection. The Committee are unable to recommend any departure from the present practice with regard to hunting. They are of opinion that the chief constable of each local authority should be the chief inspector for the purposes of the Diseases of Animals Act.

Committee's Recommendations.

The following are among the principal recommendations of the Committee:—

A test should be made of a reputed preventive which has received considerable publicity in Cheshire. Until a preventive agent is available, the slaughter policy should be continued.

Provision should be made without delay for the automatic imposition of restrictions when, in the opinion of a veterinary inspector, disease exists, or there are reasonable grounds for suspecting its existence.

Section 8 of the Diseases of Animals Act, 1894, should be amended, and a simplified procedure adopted for defining infected places.

The Ministry should be responsible for the payment of compensation in respect of all carcasses or parts of carcasses condemned as affected with foot-and-mouth disease, except in the case of animals licensed to premises for slaughter within a prescribed period, and improperly detained beyond that period.

The infected areas system of restrictions should be continued, but the Ministry should exercise a close supervision over the procedure of local authorities.

The responsible officers of the Ministry should have discretion to reduce an infected area at an earlier date than twenty-one days if the circumstances warrant it.

Periodical disinfection of all places in which animals are habitually slaughtered should be insisted upon, and the use of premises incapable of efficient disinfection prohibited.

The use of the Harwich-Zeebrugge train ferry for the importation of freshly-killed calves and freshly-slaughtered South American cattle would open up a new and dangerous source of infection which should receive the attention of the Ministry.

The Ministry should invite the Foreign Office to approach foreign Governments with a view to the cessation of the practice of carrying animals as ships' stores on vessels trading to this country.

The reduction of the number of local authorities recommended by the 1922 Committee is endorsed. Regulations made by local authorities under the Foot-and-Mouth Disease Order, 1895, should not be operative unless and until confirmed by the Ministry.

The present system of State compensation should be continued, and no scheme of compulsory insurance should be instituted.—*The Times.*

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Dr. Shaw's Remedy.

In the House of Commons on Monday, Mr. Wood, in answer to Mr. Hurd (Devizes), said he had not received evidence from Switzerland as to the effects there of the Shaw remedy for foot-and-mouth disease. He hoped it might be possible to carry out a test of Dr. Shaw's remedy in the near future.

Mr. Hurd: In that event, will Dr. Shaw be given an opportunity to be present, seeing this is his remedy? Mr. Wood: I would rather not answer that without notice. In any case, I propose to have the remedy tested in the presence of representative and impartial persons. Sir J. Remnant (Holborn), asked whether, in the event of Dr. Shaw refusing to hand over his remedy unless he was satisfied he would be present, the official test could be made. Mr. Wood said he understood there was no difficulty about obtaining the material for the test.

Sir J. Remnant asked whether, in view of the fact that Dr. Shaw had told him he had not given any samples of his remedy to any official of the Ministry of Agriculture, the man who claimed to have discovered the remedy was being fairly or properly treated by the Ministry.

Mr. Wood replied that that was a difficult matter to argue by question and answer, without full time to develop the points of view on both sides. If Sir J. Remnant thought Dr. Shaw was being unfairly treated, he (Mr. Wood) thought he would be able to show him if he had an opportunity for conversation, that that was not the case.

* * * *

Commenting on a previous reference to Dr. Shaw's remedy in the House, *The Lancet* of February 28th says:—

"The Minister of Agriculture was recently asked in the House of Commons whether his attention had been called to Dr. John Shaw's remedy for foot-and-mouth disease, which had been tried in this and other countries and proved successful; and if not, whether he would give immediate instructions to his Department for an official test. Mr. E. Wood replied: 'I am aware of claims made in regard to the efficacy of Dr. Shaw's remedy and I have decided that this particular remedy shall be tested officially.' 'We believe that the composition of the remedy in question is secret and that it has also been advocated by Dr. Shaw not only as a preventive and cure for foot-and-mouth disease in animals, but also for other diseases—e.g., influenza, for which it was originally devised. It is called by its author a 'serum,' and is administered parenterally. There appears to be no priori reason for testing this remedy in preference to the other thousand and more proprietary medicaments which are continually being pressed on the notice of the official veterinary service by more or less interested advocates. The alleged trials abroad of this particular 'cure' have never been substantiated by reports of properly controlled experiments. It so happens, however, that an experiment has already been carried out in this country by a farmer who subjected his stock to prophylactic inoculation with Dr. Shaw's 'serum,' but nevertheless experienced an outbreak of foot-and-mouth disease among the same cattle eight days later. Any reasons which may exist for expending the time of the staff of the Ministry of Agriculture in testing this remedy do not appear to be supported by veterinary or other scientific evidence in favour of its claims. It seems rather that the Ministry must have yielded to the importunate pressure of ill-advised agriculturists, who, dreading the disease, have been induced by high-sounding promises to turn their attention in this unprofitable direction. Now that serious scientific investigation of foot-and-mouth disease has been set on foot in this country and that there is a good prospect of the whole question of prevention being investigated from a broad and scientific point of view, it is unfortunate that delays should be introduced and recourse had to guesswork. It must be remembered that effective trial of this or similar secret remedies must inevitably hinder the serious research work now in progress. Members of the medical profession are usually aware of the ethical disadvantages and almost invariably futile nature of secret remedies, and are therefore able to sympathise with the troubles of their veterinary brethren in this respect."

The late Sir Clifford Allbutt.

The following appreciation of the late Sir Clifford Allbutt, whose death was announced in our issue of February 28th, appeared in the form of a letter in the columns of last week's *Spectator*:—

"Sir,—The doyen of medical science has gone to his rest, ripe in years and laden with honours. His life's work might not be spectacular or meteoric, nor was it marked by sensational discoveries, but it has a long series of successful achievements reaching heights to which few indeed are privileged to attain, the fruits of a sincere constancy of purpose, a profound mental activity and a broad outlook. Succeeding generations will give him a high place among the immortals. He will be remembered by many, and none more so than by members of the veterinary profession, for his untiring efforts to bring about a closer relationship in human, animal and plant pathology. On this question as far back as the early 'eighties his voice was as one crying in the wilderness, heard but unheeded. He was, however, never thwarted or discouraged in his purpose, and he lived to see his wishes fulfilled. Some three years ago he wrote the following to the writer:—

> "'We are filled then with hope that at last comparative pathology is entering upon its long delayed inheritance. The Royal Society of Medicine is strengthening itself by calling animal and plant pathologists into its counsels. And a no less helpful and hopeful movement is to be seen in the arrangements made by Professor Muir and his colleagues for Comparative Pathology at the coming meeting of the British Medical Association at Glasgow this summer. Further, if one-hundredth part of the colossal losses of cattle owners by foot-and-mouth disease during the last twelve months had been bestowed on a University Department of Comparative Pathology—a chair of Comparative Pathology at Cambridge has since been established—the nature of the disease and the ways of its propagation and prevention would probably by this time have been revealed, but such researches must not be *ad hoc*, they must be a part of a larger and often apparently alien, but continuous, series of investigation. The light on the corner must be a part of a general illumination.'"

We are all the poorer for his passing, but his works and his name shall live.—I am, Sir, etc., W. M. Scott, F.R.C.V.S.

Friarn House, Bridgwater.

The Veterinary Record.
14th March, 1925.

TRANSIT FEVER.

Mr. William Hepburn is to be complimented on bringing to the notice of the profession the existence of the disease which, for want of a better name, he has termed "Transit Fever." Practitioners in the South have heard little or nothing of the disease, but in the North, and especially North of Perth and in Aberdeenshire it causes annually a very considerable loss by death amongst the cattle. Since the outbreaks occur after the introduction to a farm of animals imported from Ireland or the Orkneys—animals which previously have been healthy and come from healthy localities—it is surmised that the disease is contracted *in transitu* and readily develops owing to the unnatural conditions to which cattle are subjected on the short sea and rail journeys and to the close, unventilated atmosphere in the byres in which they are housed in the North of Scotland. It is apparently an acute catarrhal fever which, when once developed, is only too often rapidly fatal, and it seems to be the general consensus of opinion that early treatment is essential, following upon early diagnosis.

The way in which the disease is contracted, namely, the cattle being placed in stuffy, overheated and improperly ventilated ships, wagons and byres is only one more proof of the well-known peculiarity of animal life, that they can withstand exposure, hardship, severe climatic conditions, both cold and wet, provided they have food, freedom and unlimited fresh air. We know that most of the winter ailments amongst human beings are contracted in trains, theatres, and such like over-heated and badly ventilated places. Also we have the curious fact that seamen and fishermen can and do withstand enormous hardship from exposure, wet and chill, only regularly to fall prey to ordinary catarrh so soon as they come ashore into over-heated and ill-ventilated rooms. It appears that after two or three days' experience of vitiated atmosphere, both man and animal are especially sensitive to chill and exposure, Nature apparently being unable to adapt herself to such violent changes.

The North of Scotland Division has taken a wise step in conferring with the local branch of the Farmers' Union so that joint representation on the subject should be made to the Animals Diseases Research Association, asking for a thorough investigation into the cause and prevention of the disease. Incidentally some good may result from the publicity which has been given in all the Scottish newspapers to the discussion which took place at Aberdeen and to the remarks of many members that the comfort and safety of animals in transit needed great improvement. The inspection of both cattle steamers and cattle loading and cattle trucks cannot be too rigorous, for a little laxity or a little negligence may here cause an altogether disproportionate amount of suffering amongst the wretched animals whose misfortune it is to have to make these journeys.

CLINICAL AND CASE REPORTS.

Contagious Bovine Pleuro-Pneumonia.

By Major A. N. Foster, O.B.E., F.R.C.V.S., Uganda.

The above-mentioned disease has not existed in England for many years, so that, only those veterinary surgeons who emigrate, to work in those countries where this disease still exists, are familiar with it in field practice.

Personally, I had never met with contagious bovine pleuro-pneumonia until the year 1920, shortly after my first arrival in the Uganda Protectorate.

The following short account of a batch of cattle infected with contagious bovine pleuro-pneumonia may be of interest.

In September, 1920, Stock-Inspector R. Todd, of the Veterinary Department, Uganda, reported to me that he considered that pleuro-pneumonia existed in a herd of cattle which had been "run" from Karamoja, just over the border, into Bukedi District. He reported that he found twenty-seven head of cattle—bulls and bullocks—in the herd. One of these, being very sick, was slaughtered with the owner's consent, and he made a *post-mortem* examination. He described the thoracic lesions which he found:—"Lungs solid—fast to the chest wall—the chest cavity contained a quantity of clear straw-coloured inodorous fluid; lungs on section showed a marbled appearance." The remaining twenty-six head were placed under guard in strict quarantine. Four of these were subsequently slaughtered under Mr. Todd's supervision and he reported finding thoracic lesions in one of them, which he considered to be those of contagious bovine pleuro-pneumonia. Subsequently one animal was reported by the native guard as having died from "snake bite."

In January, 1921, I was able to visit the remaining twenty-one animals of the herd and personally inspect them. Any close or detailed examination was precluded owing to the wildness of the cattle. I did not note any symptoms of sickness; on the contrary, the animals were in prime condition. However, I picked out one animal which was not in quite such good bloom as its fellows and had him slaughtered; the *post-mortem* examination showed him to be entirely free from disease.

By March, 1921, two further deaths were reported by the native guard as having occurred from "snake bite." I may here mention that all native reports of death in this herd were supported by the production of a hide in lieu of a beast. I believe that these deaths from so-called snake bite were in reality due to contagious bovine pleuro-pneumonia. (The natives concerned appear to be entirely ignorant concerning this disease).

In April, 1921, I had the remaining eighteen animals brought under escort (to prevent contact with other cattle *en route*) to the District Station, Mbale, to be auctioned off as slaughter cattle. They

travelled a distance of about 92 miles in five days. Shortly after arrival two animals were obviously sick. One of these died ; the other was killed (" to save its life"). Both these animals showed, on *post-mortem* examination, lesions of acute pleuro-pneumonia.

The remaining sixteen animals, which were in prime condition, were kept isolated and were slaughtered off from day to day—the carcases or parts of them being passed as " fit for human consumption." Nine animals showed *post-mortem* examination lesions positive for the disease, some of them being " lungers." One had thoracic lesions (pleuritic adhesions and fibrous induration of one lung—doubtful contagious bovine pleuro-pneumonia ; probably an attempt at resolution). Six animals had no lung lesions, *post-mortem* examination showing them to be perfectly healthy.

To summarise, assuming that the cases recorded as snake bite were really cases of contagious bovine pleuro-pneumonia :—

Of 27 animals, 10 were healthy, 16 were positive cases of the disease ; one was doubtful. The main points to note from this outbreak are :—

1. The slow and insidious nature of contagious bovine pleuro-pneumonia.
2. The ease with which infected cattle may pass a careful inspection (*vide* my experience of January, 1921).
3. Exertion hastens the course of the disease (*vide* result of being driven 92 miles in five days—two animals arrived *in extremis*).
4. Pleuro-pneumonia cases—especially " lungers " —are frequently fat and in prime condition.
5. Some animals in close contact with infective cattle resist infection for months (*vide* six animals not affected though members of an infected herd for at least eight months).
6. The long period which must elapse before a herd can be declared non-infective (if ever).
7. Carcases of animals suffering from pleuro-pneumonia have no keeping quality.

Disease of the Sphincter of the Cow's Teat.

By O. Stinson, M.R.C.V.S., Appleby.

A cow's teat, because of its position, is very liable to be stepped upon by the cow herself or by the one tied next to her. Every practitioner who has much to do with cattle, frequently comes across these cases, and I am sure wishes he could go prepared for a radical operation. Teats injured in the above manner, prove to be, in some instances, the beginning of very serious trouble, especially when the owner has been passing a milk syphon or has delayed sending for help, until the patient is perhaps suffering from auto-intoxication. These cases used to puzzle the writer, perhaps because they had a way of getting worse. After using bougies, syphons, etc., with anything but satisfactory results in many cases, it suggested itself to me, that, although nothing in the nature of a wound could be found on the outside (including the tip) of the teat, there must be a focus of infection somewhere, because in some cases, after using reliable bougies, at least with regard to their being antiseptic, and syphons above suspicion, they often got worse. Consequently it was a common practice to amputate teats, although one had been in daily attendance, perhaps from the beginning of the trouble, and more frequently in attending cases where assistance had been requested late. On examining these amputated teats it was frequently found that a portion of the sphincter was necrotic ; this fact suggested that, as surgeons, we ought to remove this diseased tissue as would be done if similar disease were present in any other part of the anatomy adapted for surgical intervention.

It was decided to incise crucially the affected teats, through the sphincter into the duct, first to enable the sphincter to be examined and also to allow the contents of the quarter to be got away. Where the sphincter is enlarged to such an extent as to render it difficult or impossible to get rid of the milk with the hand, this is invariably done now, and at least it allows the quarter to be relieved of the milk by ordinary milking. The diseased portion of the sphincter is then removed if present. Afterwards, before each milking, the end of the teat is bathed with a warm antiseptic solution to open the wound, when the contents of the quarter can easily be got away ordinarily. It has also been the practice to instruct the owner to insert a little pulv. iodoform into the incision, getting a little into the duct after each milking. If the milk is good when this treatment is undertaken, the quarter is fairly soon all right. In cases where the temperature is high and the cow seriously ill, unless necrosis or other very serious trouble has reached the substance of the quarter, they do remarkably well. To delay this line of treatment is inviting something serious.

As far as investigation carries one, the reason for the sphincter becoming so frequently involved, without in many cases there being any sign of a wound or even a mark on the teat, is the fact that it is composed of tougher tissue, while the skin stretches.

The operation is simple ; the operator can choose his own instruments, but for the incision, a very sharp ordinary castrating knife answers well, this is best done boldly before the cow anticipates anything of the sort, first of all, of course, having the subject properly secured. The results are good and there is the satisfaction that the treatment is being carried out according to one of the important rules of " Surgery." A remarkable percentage of quarters give good milk after the outlined treatment in bad cases....The teat heals up after a time, and, in a great percentage of cases, no one is any the wiser that there has been any teat trouble. If the cow is being " dried " at the time, it is important to continue milking regularly and to give instructions for the milk glands to be stimulated by feeding the cow well, as it is the flow of milk which keeps the sphincter open and allows it to heal so that the remainder of the sphincter retains its function during and after the treatment. Simple incision can be carried out (without dissection of a portion of sphincter)

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DIVISIONAL REPORT.

South-Eastern Division.

ANNUAL MEETING AND DINNER.

There was an excellent attendance at the Annual Meeting and Dinner of this Division, which was held at the Castle Hotel, Tunbridge Wells, on Wednesday, February 4th, 1925. Mr. F. C. Gillard (President) occupied the chair, and the following also signed the attendance book:—Messrs. Andrew, Cattell, C. Crowhurst, F. Crowhurst, Dier, Dunkin, Ebbetts, Hinton, T. F. Hogben, Macdonald, Marks, Pugh, Roberts, Warren, Whicher, and H. P. Hogben (Hon. Secretary).

Visitors.—Messrs. Ash, Barrett, Dalling, Elphicke, Livesey, and Spicer.

It was agreed that the confirmation and signing of the minutes of the two previous meetings should be held over until the next meeting.

CORRESPONDENCE. *Apologies.*—J. Bell, Professor J. B. Buxton, E. Lyne Dixson, Major Dixson, W. W. Gulleford, Major F. T. G. Hobday, Messrs. Morgan and Pickering, and Professor Wooldridge. The letters concerning Mr. E. Lyne Dixson and Professor Wooldridge contained the regrettable information of serious illness, and the Secretary was directed to convey to the sufferers the sincere sympathy of the members and their earnest hopes for rapid and complete recovery.

A letter from the Secretary of the N.V.M.A. was read introducing to the notice of the division the resolution formulated by Sir John Moore concerning the suggested establishment of a Veterinary Research Council, which resolution had been adopted by the Central Division and sent up to the "National" for circulation to all the divisions. The resolution was read and Major MACDONALD took exception to the suggested inclusion of three medical scientists.

Mr. PUGH spoke to being at the meeting of the Central Division at which this matter was discussed, and said that the approving vote had been unanimous. The name of at least one medical man—Sir William Leishmann—had been mentioned at that meeting as a likely member of the Veterinary Research Council, and no exception was taken at that meeting to the suggested membership of the Council of the three medical scientists. It was assumed that they would be included. I should like to support the resolution again to-day.

Mr. WHICHER: I should like to ask what is the reason for the inclusion of three medical men?

The PRESIDENT: I think this is a subject which requires a considerable amount of thought and we have not the time to discuss it fully here to-day. If someone would suggest that a small committee be appointed to consider the resolution and report to the next meeting, it would save us a good deal of time and enable the members to become enlightened on the various points which would be raised.

Mr. ROBERTS: It is a proposal from one of the finest men in our profession to-day, and Sir John Moore would not have put it before us without considerable thought. I think, further, if any material matter to which exception could be taken existed, it would have been brought up at the meeting of the Central Veterinary Society. I look upon this resolution with great favour and I have great pleasure in supporting it. But I do not put this resolution at the moment, as I think it should be thought over.

It was proposed by Mr. ROBERTS and seconded by Mr. T. F. HOGBEN, and agreed, that the resolution be printed and circulated to every member of the division as soon as possible previous to the next meeting, upon the agenda of which it should be placed.

PROPOSED EXTENSION OF AREA.

Major DUNKIN: A matter arises in connection with the many visits I have recently paid to North-east Sussex, inasmuch as I came into touch with several veterinary surgeons who, busily engaged in their practices, are stowed away in various odd corners of Sussex. In the course of conversation with them, they all expressed their regret that they were quite out of touch with any division of the "National." I suggested that the South-eastern was the nearest division the meetings of which they could attend, and that we occasionally came to Tunbridge Wells, where we should be very pleased to see them. They pointed out, however, that they, being single-handed men, found it extremely difficult to get away. I feel very sorry about this, and I think it is this division's loss that they are not numbered amongst our members. I have a suggestion to make, and that is, that we should alter our routine of visits in the future. In the past we have rather congregated round about East Kent, and I propose that in future we hold one meeting a year at a place subsequently to be decided upon by the Council somewhere in North-east Sussex, with the idea of enlisting these men in our ranks, for those I have met are such as should be members of this division.

Major DUNKIN acquiesced in the PRESIDENT'S suggestion that the proposition should also include extension to a part of Surrey.

The meeting concurred in the suggestion and it was agreed also that the Secretary should write a

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(*Continued from previous page.*)

successfully in cases where there is a sore at the end of the teat which makes milking difficult.

For those not inclined to practise dissection of a portion of the sphincter, it is worthy of mention that the same results can be achieved usually by making a bold incision, as above described, and taking special care before milking in addition to bathing with an antiseptic solution to clean out energetically the "V" shaped incision at its depth with cotton wool, afterwards using pulv. iodoform as indicated.

The writer invariably adopts the above treatment immediately now, in cases where the teat canal cannot be emptied normally on account of trouble at the teat end.

letter to all the practitioners concerned, informing them of the decision and wishes of the division in the matter.

Election of Officers.

President: Mr. F. C. Gillard (re-elected).

Vice-Presidents: Messrs. C. Crowhurst, F. Crowhurst, E. L. Dixson, E. Ebbetts, T. F. Hogben and C. Roberts (re-elected).

Members of Council: Messrs. J. G. Cattell, W. Crowther, J. B. Dier, E. Morgan, L. P. Pugh and A. Whicher.

Hon. Secretary and Treasurer: Mr. H. P. Hogben (re-elected).

Hon. Auditors: Messrs. A. Whicher and P. Perrin (re-elected).

The Treasurer presented his report and balance sheet, which showed a balance in hand on the General Account of £7 3s. 5d. and on the Dinner Fund Account of £3 2s. 6d.

The President expressed his pleasure at the satisfactory financial position of the division and moved the reception and adoption of the report, which was agreed.

New Members.—Election: Major Macdonald, of Nonington. Nomination: Mr. A. Spicer, of Oxted.

Resignation.—Major T. Hibbard, of Dover, who, having retired from practice, was not now able to attend the meetings. The resignation was accepted with regret.

Enzootic Jaundice (Yellows) in Dogs.

The President called upon Mr. L. Pugh to present the first part of the paper to be submitted by the latter and Mr. Dalling upon the above subject.

Mr. Pugh said: Mr. Chairman and Gentlemen, When your able Hon. Secretary extended an invitation to read a paper before you to-day, I thought if we could induce Mr. Dalling to come and talk on the recent work on Canine Jaundice it would prove to be a matter of no little interest to those of you present. Mr. Dalling very kindly consented to do so, but only on condition that I should share a little of the responsibility with him.

To this end I propose giving a very brief résumé of the clinical side of this question, with tentative suggestions as to the most hopeful lines along which treatment should be carried, whilst Mr. Dalling will tell you of the experimental work performed in the demonstrating (in our belief) and proving the etiology of this troublesome and fatal disease.

As you are all aware enzootic jaundice is a disease that occurs most frequently amongst sporting dogs and becomes most noticeable as an enzootic when hounds or dogs are collected together in large numbers, *e.g.*, foxhound kennels, beagles, etc.

The comparative immunity to this disease exhibited by town dogs, pet and lap dogs is due to the fact of the chance of their running across infective rats or rat-infected material is small, and it has been shown in our experiments that rats are almost certainly the main vectors of canine jaundice.

Symptoms.—We have divided the disease into two main types depending upon certain clinical features, but it must be emphasised that every gradation exists between the two types.

(*a*) The Hyperacute and Hæmorrhagic Type.

The chief features of this type are:—

(1) *Sudden Onset.*—An animal may be taken ill so suddenly that an acute, irritant poison is often suspected. I have on three occasions received dogs from the R.S.P.C.A. with the history of this hyperacute type and on each occasion I have had difficulty in convincing the owners that their pets were not poisoned maliciously.

(2) *Temperature.*—When taken at the onset, the temperature is high, 104-106° F. Death is always preceded by a sudden rapid fall to subnormal.

(3) *Nervous Symptoms.*—There is intense prostration. If the dog is handled he will sometimes cry out in a manner similar to one affected with meningitis. In like manner they will on occasions bore their heads into a corner in their efforts to obtain relief from pain.

(4) *Bodily Symptoms.*—There is marked and rapid wasting, a well-formed and grown pup becoming a physical wreck in 24-48 hours.

(5) *Respiratory Symptoms.*—Hæmorrhage from the nose and into the lungs are common. The latter gives rise to acute dyspnœa and definite râles can be heard on auscultating the chest. There is often a repressed cough.

(6) *Alimentary Symptoms.*—There are frequently observed hæmorrhages in the various parts of the alimentary tract. Lips, gums, stomach, the small intestine may all be affected in one animal. There is usually an intense thirst for cold water, but a complete loss of appetite. Fæces are passed in small amounts and are not infrequently blood-stained. In some cases hæmorrhage may be so excessive as to apparently be the cause of death.

(7) *Urinary Tract.*—The urine is always dark-coloured and passed in small amounts. There is invariably albuminuria present.

(8) *General Symptoms.*—By careful examination one can usually detect enlargement of the superficial lymphatic glands, more especially the cervicals. An intense conjunctivitis may be present; in other cases, however, there may not have been any very marked eye trouble during the acute phases, but definite keratitis during the convalescent stage.

It is only possible to speak of a limited number of these recovered animals, since, in my experience, before an antiserum was available, the mortality was nearly 100 per cent., death occurring within a few hours to several days from the onset.

(*b*) The Icteric Type.

(1) *The Onset.*—In this type (the "yellows" of laymen) the onset can vary considerably. You may have a form so mild and insidious that the first signs of illness is the actual appearance of icterus; on the other hand, an animal may be ill for several days

before the gums and mucous membranes become yellow.

(2) *The temperature* is seldom above 103° F. even in the early stages, and it invariably falls to normal or subnormal on the appearance of the icterus.

(3) *Nervous Symptoms.*—The dog always shows more or less depression, although in the milder forms there are periodical turns of cheerfulness. The tendency is for the depression to become more pronounced, especially when intussusception of the bowel has taken place.

(4) *Respiratory Symptoms.*—Bronchial râles can be detected in the more acute forms, showing tendency to hæmorrhage.

(5) *Alimentary Symptoms.*—There are varying degrees of yellow pigmentation of the gums, the latter are usually free from mucous and the teeth are clean. The mouth does *not* tend to become offensive in the majority of cases. Vomiting is constant and streaks of blood may at times be observed in the vomitus. Constipation is usual in the early stages, but this may give way to a greyish blood-streaked loose motion as the disease progresses. Intussusception of the small intestine occurs in the greatest majority of fatal cases before death.

(6) *Other Symptoms.*—There are quite a number of small variations from the normal that it is not necessary to recall here. There are two points however, that must be mentioned; (*a*) an invariable rapid wasting of the body muscles and fat; (*b*) and the not infrequent occurrence of conjunctivitis. The latter undoubtedly has often influenced writers to include canine jaundice as one of the so-called types of distemper.

TREATMENT. (*a*) Serum treatment; (*b*) General treatment.

(*a*) *Serum treatment.*—If the disease breaks out in a litter of puppies, the injection of anti-leptospira serum into all those not showing icterus will protect them entirely from the disease, or will allow them to develop it in a very mild form and recover. This in itself is a great help to us in the country, but there is accumulating evidence that if serum is administered early enough in the course of the disease it will have marked beneficial effects. The exact significance, however, of these latter cases is not yet established.

(*b*) *General treatment.*—One fact emerges as a result of many *post-mortem* examinations, and that is, that purgatives must be withheld. The whole aim of treatment should be to keep the intestines in as quiet a condition as possible, at the same time administering serum. In this way, one hopes to overcome the infection, or rather, one hopes that the body defences will beat off the attack without the fatal complication of intussusception taking place. Small repeated doses of liquid paraffin may be given, whilst enemata of normal saline at blood heat are of undoubted benefit. A diet of milk, water and raw eggs is recommended, whilst meat extracts and juices should be avoided. Repeated small doses of bicarbonate of soda help to allay the vomiting and thereby aids recovery.

With these few disjointed remarks, gentlemen, I will hand over to Mr. Dalling, and at the termination of his paper we will await with pleasure the pithy observations of our popular President, a practitioner who has spent much time in investigating this disease in all its phases. I must not, however, sit down without making reference to the work of our colleague, Dr. Okell, who has laboured indefatigably upon this question, and whom it would have been a great pleasure to you, I am sure, as well as to us, to have had with us this afternoon. (Applause.)

Mr. T. DALLING, M.R.C.V.S., of the Wellcome Research Laboratories, Beckenham, then addressed the meeting as follows:—

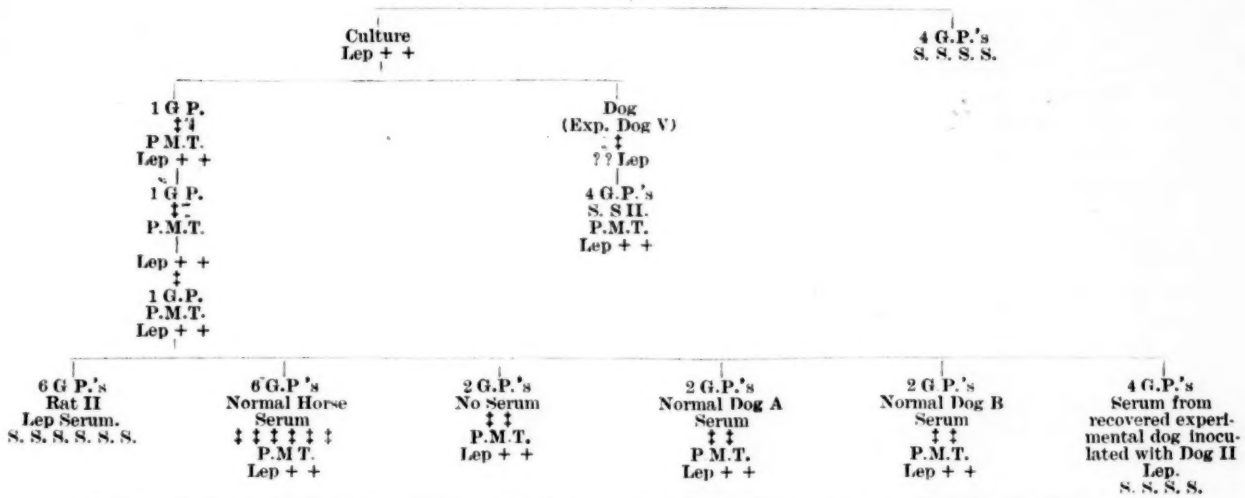
Mr. Pugh has dealt with leptospiral jaundice from a clinical aspect. I wish to refer to some of the experimental evidence showing that the *Leptospira icterohæmorrhagiæ* is associated with outbreaks of canine jaundice.

It was in September of last year that the first dog affected with jaundice was brought to us. At that time Dr. Okell was studying the preparation of an anti-leptospira serum for use in cases of Weil's disease in human beings, and naturally anything relative to jaundice was of the greatest interest. After a prolonged search, typical leptospiræ were seen in smears made from the ground-up liver of the dog, using the dark ground method of illumination in the examination. More affected dogs were obtained—in all, ten were examined, and in three of them the presence of leptospiræ was demonstrated by direct examination. Three cases were the hyper-acute hæmorrhagic type and seven the icteric.

Some difficulty has been experienced in demonstrating leptospiræ. Direct examination of smears made from ground-up liver, guineapig inoculations, and culture and section work have been carried out in all cases as a routine, and the absence of the parasite was only accepted when it could not be found by any one of these methods. In three of the affected dogs (examined) we were able to demonstrate the presence of the leptospira in the tissues, and in a fourth we believed they were present in direct smears of the ground-up liver. In only one of the three dogs referred to above were typical leptospiræ seen on direct microscopical examination of the tissues; in a second they were grown in culture, and in the third they were found in the livers of guineapigs after inoculation with the ground-up dog tissue. In one we were able to identify leptospiræ in sections of a lumbar gland stained by Levaditi method. It will be evident that considerable difficulty was experienced in finding leptospiræ, and in this connection, it may be said that a similar difficulty has been experienced by research workers on human spirochætal jaundice or Weil's disease.

The sub-joined table illustrates the procedure adopted to demonstrate the presence of the parasite. It also shows its relation to the rat strain of leptospira and to canine jaundice.

PASSAGE TREE OF DOG III LEPTOSPIRA.



P.M.T. = Typical post-mortem appearances. ‡ = Died. G.P. = Guinea Pig. Lep + + = Many leptospiræ present.
S. = Animal survived with no symptoms.

The same procedure was adopted with all three strains. The Rat II. Lep. Serum referred to in the table was made in a horse, using leptospiræ procured from rats found in association with an outbreak of Weil's disease in Scottish mines and kindly supplied by Dr. Buchanan.

Evidence is thus obtained that the serum made from the rat strain of leptospira protects against the dog strain. Further, it will be noted that a dog which recovered after experimental infection with dog strain leptospira yielded a serum which protected against the dog strain leptospira. Lately we have been fortunate to receive serum from two dogs which recovered from the natural disease without biological treatment. In one case a small quantity of serum only was received and it showed protection against the dog strain leptospira. From the second case much more serum was got and we have been able to show that it protects against both the rat and the dog strains of the parasite.

The inoculation of healthy pups with infected dog and guineapig tissues, and with culture of leptospiræ, has been carried out, and in each case the disease has been reproduced. A very close resemblance exists between the naturally occurring and the experimentally produced disease both from a clinical and a *post-mortem* standpoint. In no dog has the hyperacute hæmorrhagic type been experimentally produced; all have shown jaundice and the course has been that of the icteric type. The typical temperature curve, depression, conjunctivitis, constipation, giving place later to blood-smeared mucoid loose stools, vomition, discolouration of skin and mucous membranes have been reproduced.

The *post-mortem* lesions have been similar, the typical hæmorrhages having been found in the lungs, intestine, lymphatic glands and serous membranes. The same variation in the extent of the hæmorrhages occurs in the experimental as in the natural disease.

Pups have also been inoculated with the rat strain of leptospira, and similar clinical symptoms and identical *post-mortem* pictures have been got as in those pups inoculated with the dog strain.

From the above it will be evident that the rat strain leptospira is identical with the canine strain. This leads us to believe that rats are the main vectors in the spread of the disease. Rats from all the kennels from which affected dogs came have been examined and the presence of leptospiræ in the kidney demonstrated. It is highly probable that kennels become infected with leptospira excreted in the urine of the "carrier" rats.

Prophylaxis.—Three points should be kept in mind in attempting prophylaxis. (1) The use of anti-leptospira serum; (2) the eradication of rats from infected kennels; (3) the question of recovered dogs becoming "carriers."

In the laboratory there is adequate evidence to show that anti-leptospira serum will protect guineapigs and dogs against fatal doses of the parasite. In all cases the control animals which received no serum developed the typical disease. An experiment has been carried out to show that even after infection has taken place, the serum will prevent the development of the disease for some time. The following explains the experiment:—

1st day—11 dogs inoculated with leptospiræ.
2nd day— 2 of the above inoculated with serum.
3rd day— 2 were inoculated with serum.
4th day— 2 were inoculated with serum.
5th day— 2 were inoculated with serum.
6th day— 2 were inoculated with serum.
1 dog kept as a control.

Dogs inoculated with serum up to the fourth day developed no symptoms of the disease, while those inoculated later and the control dog became affected with jaundice and died; the *post-mortem* appearance was typical. Field experiments are being carried out and results up to date are considered favourable by the veterinary surgeons concerned.

Attempts are being made in the laboratory to immunise dogs with vaccines made from leptospiræ.

The question of treating affected cases with serum is also receiving attention. From the above experiments it will be obvious that early inoculation is likely to produce the most favourable results.

In view of our demonstration that rat strains of leptospira can produce the typical disease in dogs, it is highly important to eradicate rats from kennels. Since our article appeared in the *Veterinary Journal* (January, 1925) we have had communications from veterinary surgeons and others who have had experience of the disease, and the majority believe they can associate the presence of rats with affected dogs. We believe that the food and litter in the kennels become infected and care should therefore be taken that such materials and vessels containing them are thoroughly sterilised.

One dog experimentally infected with dog strain leptospira recovered and we were able to demonstrate the presence of active leptospiræ in the kidneys some weeks later. This is suggestive that recovered cases may act as disseminators of canine jaundice and till it has been proved that dogs recovered from the natural disease do not continue to excrete the parasite, measures should be taken to prevent such a means of infection.

Discussion.

The President: First of all I desire to pay my tribute of thanks to the essayists, Mr. Pugh and Mr. Dalling, for so very kindly coming to our meeting and giving us this most interesting paper. (Hear, hear.) In the past, of course, we have had Mr. Pugh here, and we very much appreciate the interest that he takes in the division, and also his willingness to present to us material which is new, more or less, to the profession. This paper was first published, very recently, in the *Veterinary Journal*, and the authors also presented it at a meeting of the Comparative Section of the Royal Society of Medicine on Wednesday last. They will appreciate the fact that the rehearsal they had there has enabled them to rectify a few omissions, but unfortunately that robs the opener of the discussion of the opportunity of taking advantage of the few things which were omitted on that occasion.

With regard to the nomenclature of jaundice, I do not think there can be much misunderstanding, but the most extraordinary thing is that jaundice in dogs has for long hidden its cause. A similar disease exists in Africa under the name of canine piroplasmosis. It is remarkable to me to think that you should have two diseases which are regarded as separate entities and yet be identical in symptomatology, temperature chart, and *post-mortem* appearances—I am also including spirochætal jaundice. I should like to say here that it is possible that we may have more than one causal organism of jaundice in this country. The evidence that we have had put before us this afternoon proves that we have a spirochætal jaundice, but it is possible that we may find that there is another type, though I think it is quite evident that we have not got piroplasmosis.

I believe Messrs. Dalling and Pugh have a slight idea that there is another form of jaundice in this country apart from the spirochætal form. I would like them to express their opinion clearly on that matter. I also desire to ask them if it is possible that mice might be transmitters of this disease. I ask that because at the moment I have a case in which I cannot trace any rat infection at all. The dog, which is two and a half years old, and is ill with the disease, sleeps in the house and is not a dog which is allowed to go running about. He lives in a house in which there are mice, and he is a great mouse catcher, eating them frequently. I cannot find any rat workings anywhere. I have not had an opportunity of taking any blood serum during life, but if the animal dies I shall be happy to send some to the laboratory for Mr. Dalling to examine; I also hope to get some mice.

It is, of course, possible to mistake jaundice for other things. Poisons have been mentioned, and in this connection I think the ease with which phosphorus poisoning might be mistaken for jaundice should be emphasised. The dog in question had been ill for several days when he was brought to me. He was vomiting and sleepy, and had a temperature of 102° F. I looked at the membranes, but could not see them to be yellow at all. I saw him at night-time, however, and it is worth noting that a dog might be "as yellow as a guinea" and if it were night-time this symptom would not be observable. I have not seen a great deal of pain in these cases, unless intussusception was present. There was a history (to which, unfortunately, I paid too much attention) that this dog had eaten some bones, and, in short, I failed to diagnose jaundice that night. Next morning they telephoned that they had had an awful night with the patient, the dog continually howling in pain. That is quite exceptional in jaundice—I have never heard of such a thing in the hundreds of dogs which I have had to treat for this disease. As soon as possible the dog was X-rayed, and when I saw him (not till two hours later) he had got jaundice badly. (Laughter.) Thus the people were put to the expense owing to my not having been quite guarded enough.

I am very glad to see that Mr. Pugh has to-day made a great point of the wasting, because that, to my mind, is one of the most characteristic symptoms. I believe Mr. Pugh mentioned, in speaking of the hæmorrhagic type, that the urine was always highly coloured; it is not often highly coloured in the icteric type.

Referring to one of the charts shown us by Mr. Dalling, I believe that in one of those natural cases there was a temperature of 105° F. That, surely, is very exceptional. Probably we practitioners miss this high early temperature. I can never remember recording a very high temperature; in fact, only once have I recorded a temperature as high as 103.2°F.

In regard to diet, I was wondering why Mr. Pugh had emphasised the fact that he did not give meat extracts. Is it a case of leptospiræ thriving on meat?

I was hoping something might have been said about the occurrence of jaundice in ferrets. I think it is quite likely that when the temperature is not high in ferrets the disease is not distemper (as breeders invariably call it), but jaundice.

In 1917 I made some notes on this disease on experiments I carried out in 1908. I succeeded then in inoculating a fox terrier, about six months' old, from a natural case in a Harrier. The day the latter died I inoculated my terrier and on the thirteenth day it died of jaundice. On that day I inoculated its brother and this dog died also on the thirteenth day. I did not carry the experiments any further.

With regard to piroplasmosis, I have made some reference to this other type of jaundice, but with regard to leptospiral jaundice, I think the authors have given us ample proof that that particular type is a disease met with and that it is transferable. In this case I do not think we need unduly press for the fulfilment of Koch's postulates.

I should like to ask how they explain the protection from the leptospiral serum—is it due to anti-toxic properties, and is it a case of giving a sufficiently big dose, as is the case with anti-tetanic serum ?

The point was mentioned of the dog being a carrier ; I think that might explain why dogs coming to kennel after walking often fall victims to jaundice. I am rather sorry that Mr. Dalling has not dealt with the microscopy of the blood. I trust he will do so later, because it is a thing which again emphasises the close relationship between jaundice, as we know it in this country, and piroplasmosis. I am very struck with the similarity of the pictures with which one meets—you get the leucocytes in very large numbers, especially the polynuclears, and they assume great phagocytic activity ; you have nucleated red cells, and there are a large number of blood platelets and disintegrated corpuscles, *i.e.*, you have the same effect as is met with in piroplasmosis, and the only difference appears to be that you have not got the same organism.

Mr. SPICER : I wish to ask if the authors have done any work on cats in this connection. They must eat a large number of rats—are they immune ? Again, you get very little jaundice amongst puppies whelped on farms, where rats often abound.

Mr. EBBETTS : I should like to give a little experience (of jaundice) which I had a few years ago. I had a bad outbreak amongst the Royal Engineer Beagles, and five or six died. At last I tried nuclein as an " off-chance." After an initial experiment with one dog which got better, I used it on all the affected animals, and I did not lose another dog. Since then —I get a few cases every year—I have used nuclein with excellent results.

Mr. WHICHER : Mr. Pugh says " never give purgatives" ; as a matter of fact, the cases I have had have recovered on a treatment of calomel, copious enemas and raw meat. A friend of mine has a large number of spaniels and retrievers, and his place is overrun with rats. In one day, with dogs of my own as well, we went out and killed over 50. My own dogs remained well, but his contracted jaundice. I treated them for him and many got better. We have one interesting case in the town now. It is a Peke., and to my knowledge it has had three or four attacks of jaundice, which it has always thrown off with the calomel and raw meat treatment. I am not attempting to criticise the paper—I am only giving my experience as a practitioner. Up to the present hope is only held out to us if we get these cases by the fourth day ; unfortunately, most of us do not get the cases until they have been ill about a week.

Major DUNKIN : I think this division of the " National " is entitled to " pat itself on the back," in so far as it is the first division which has had this paper presented it. (Hear, hear.) I was present at the meeting of the Comparative Section of the Royal Society of Medicine when this paper was first read, and I was deeply interested in it. It was not possible, however, for me to take part in the discussion then as there were many others clamouring to do so, and time would not permit of more taking part. I have very little to say regarding the remarks of the speakers this afternoon, because those remarks are somewhat attenuated in comparison with what they were the other day, and it was a few of these on which I should have commented had the opportunity presented itself. I would like, however, to comment upon one statement made by the President. He mentioned ferrets, and said he had never seen or heard of a case of jaundice in a ferret. I have been experimenting with ferrets during the last twelve months—in regard to distemper especially—and of 80 to 100 ferrets which have developed distemper, either naturally or experimentally, I have not seen a case of jaundice, or anything approaching it. The many rabbit and ferret breeders with whom I have been brought into tell me the same story. If canine leptospiral jaundice is not an infectious disease, and I understand from one of the papers that this is so, then it cannot possibly have any bearing on the subject of distemper.

Mr. ELPHICKE : I should like to ask Mr. Dalling if he thinks leptospiral jaundice could be eliminated from the system of a dog by a course of injections of hyper-immune serum.

Mr. CATTELL enquired if trypan blue would be of any use in the treatment of the disease.

The PRESIDENT : Jaundice is to be found in any dogs, especially in low-lying districts and in foggy and inclement weather. It is possible that, in the leptospiral form at any rate, the rats living in the ditches and ponds come into the buildings in bad weather, invading kennels and outhouses for protection. It might be mentioned that in jaundice the use of mustard baths is efficacious, and it occurs to me from that, that fleas and lice may act as carriers.

Mr. LIVESEY : This subject is of very great interest to anyone who has to do any work with dogs, and I agree most heartily that Messrs. Dalling and Pugh, and Dr. Okell, are to be congratulated on bringing this piece of recent research work before the profession so soon and before a division of the " National."

As regards the incidence of the disease, I have seen it in various hunts and in all packs of hounds. When I was in practice I had seven packs to attend and for many years I kennelled one pack at my own place. I have seen the disease in Foxhounds, Terriers, and Retrievers—it appears pre-eminently in sporting dogs—but I have met with comparatively few cases amongst dogs kept in the town. That has been a recognised fact for 30 years or more, for this disease was described in the nineties. With regard to the point made by the essayists concerning rats, I do not for one moment wish to throw any doubt upon their statement—probably what they say is quite true—but one would think, especially if rats are responsible for transmission of this type of jaundice that the disease would be prevalent in those areas where rats were to be found in excessive numbers. I do not think that facts go to prove that that is the case. If the disease were prevalent where there was an excessive number of rats, such as in big dock warehouses, one would expect terriers going down into those warehouses to be very susceptible, but I have never met with cases in those districts—it certainly was not so in Liverpool in my young days. With regard to curative serum, I presume it must be used before the fourth day. I should like to ask the authors if the serum is going to be of any use in fulminating cases—those cases which are now always fatal in which the victims die within forty-eight hours. One only gets about 10—20 per cent. of recoveries in the others, but in these hyper-acute cases I know of nothing that will save them. It seems to me that it would be almost impossible to use, because in this disease there are simultaneous cases occurring on the premises, and the average clinician is going to have a certain amount of difficulty in diagnosing his first case as the patients will be dead before he knows what is the matter. But if he sees other young dogs sinking rapidly he may then use serum, and I would like to have some assurance that it is going to be some good. In the ordinary cases, that run for a month, I do not see why the serum should not be of some value. I have killed young puppies that were supposed to be dying of the disease and I have examined others that have died within forty-eight hours, and the amount of lesion shown is very small indeed. In many cases the most marked condition is, as Mr. Dalling says, hæmorrhage of the lungs. From observation—and I cannot give any other reason—I should say that undoubtedly a previous attack of distemper predisposes to jaundice and enables this disease to get a hold on young puppies. They are debilitated, and I suppose they fall a ready prey. It would be interesting to know what causes the icteric symptoms; how does the bile pigment get into the system? Undoubtedly it does not come from catarrh of the bile duct. I presume the bile gets into the blood and is disseminated throughout the tissues. I think there is no doubt that we have two conditions of jaundice seen in the dog—specific, such as we have had described to-night, and symptomatic, catarrhal jaundice occurring fairly commonly.

There are just two further points concerning which I should like to ask Mr. Dalling—possibly I am only displaying lamentable ignorance of laboratory methods—and one is whether they would expect the same action from a serum derived from herbivora as they would from one derived from carnivora. Would they not get a more active serum from the canine species? Also, it would be interesting to know if they have made any experiments with the leptospira in rabbits. Is the rabbit, which is essentially herbivorous, susceptible? The rabbit suffers from many liver troubles and undoubtedly readily shows symptoms of jaundice.

Mr. PUGH, who was the first of the essayists to reply, said: It has been a great source of pleasure to me and, I am sure, to Mr. Dalling also, that the papers have provoked such a discussion, and it is essentially the discussion which we wanted to take place, because when you are working on in your own way you do not hear what others have to say about it. Thus, we welcome the expression of opinions by those who have had longer experience than ourselves of this disease.

The President said we more or less dropped a hint that there might be some other form of infection causing jaundice. We did not intentionally drop any hint of the sort. The suggestion that mice might transmit the infection is quite plausible; I do not know whether any work has been done on the mouse as a possible carrier. With reference to the signs of pain, pain is undoubtedly uncommon in the icteric form, but in the fulminating type it is present and may lead to a diagnosis of poisoning.

Mr. LIVESEY: How far is that due to intussusception?

Mr. PUGH: It cannot be in every case, because if you touch them on the back of the neck they show signs of pain, suggestive of some degree of meningitis. I specially emphasised that there was every gradation between the hyper-acute and the icteric type. We were led to think that the fulminating type might have some connection with leptospiral jaundice, because of the lung and lymphatic gland lesions which we found. I think that one has to divide it into the two types because in the fulminating type the animals often die before they show any jaundice symptom at all. In the longer cases the tempertaure runs up to 105° F., and then you get death by crisis. With regard to dietary, I mentioned in the paper that I put forward the treatment as a tentative one only, because the obvious thing that causes death is intussusception of the bowel and it does seem that anything that is going to increase peristalsis is going to increase the liability to intussusception, therefore, I think that the giving of purgatives and meat extract predisposes to that. I have certainly had infinitely better results since I adopted this line of treatment. I was extremely interested in the use of nuclein. We know what empirical things will do in milk fever and other diseases, and it sounds as though nuclein might be very useful, though I do not see why it should be. With regard to the use of serum on the fourth day, I quite

agree that we often do not get these cases until the eighth day. It is established that if you get a case of jaundice breaking out in a litter and give the other puppies serum they do not die, whereas if you do not the mortality rate is high. If you can inoculate all in-contacts with anti-leptospiral serum it will be of great benefit. With regard to trypan blue, I used it in a number of cases to begin with and have never had any greater success with that than with anything else. I was very interested in Major Dunkin's remarks concerning ferrets, because when you see some cases of jaundice, especially in the early stages, you wonder whether you are up against some form of distemper or whether it is jaundice, and it does seem as though that might be a means of differentiation.

Mr. DALLING: I think that Mr. Pugh has dealt with most of the points raised, but there were some addressed especially to me. You, Mr. President, asked if we inoculated from dog to dog—we have done that and we reproduced the disease in the second dog. We never used the blood, but the liver, because it was the best site for finding the leptospira. As Mr. Pugh has told us, the hyper-acute type runs a high temperature as a rule, but in none of our experimental cases have we seen this type; all our cases showed jaundice, but they never showed a high temperature.

I should not think that the anti-leptospiral serum is an anti-toxic serum, as one is injecting anti-bodies and not anti-toxin. The dose we put down at 10 c.c. because we think that is sufficient to counteract any virus in the animal's body. Someone asked if cats were immune. We have never tried them, but we put them down for trial some time. I do not think that the use of hyper-immune serum will prevent "carriers." Mr. Livesey brought up the question of hyper-acute cases and the use of serum—I do not think that in these cases serum would be of any use whatever. I agree with him that sometimes lung lesions are very difficult to locate. He also spoke about dog serum *versus* horse serum. Dog serum is certainly better with a dog than horse serum; if you inject a dog with dog serum that serum is expelled very gradually from the body, whereas if you inject horse serum it is a foreign protein and is eliminated rapidly. Leptospiræ can be made to infect rabbits, but in the laboratory it was found that rabbits are not suitable subjects because of the irregularity with which infection takes takes place.

A hearty vote of thanks to the essayists, followed by a similar tribute to the President for his conduct in the chair, terminated the meeting.

THE DINNER.

A large number of ladies joined the company at the dinner which followed the meeting and which well maintained the high standard set by a long series of divisional dinners at Tunbridge Wells.

The principal toast, that of "The South-Eastern Veterinary Medical Association" was submitted by Mr. G. H. Livesey, who, after expressing the pleasure it gave him to propose the toast of the prosperity of their division, said that in the course of his duties as Secretary of the parent body it fell to his lot to visit many divisions and, on occasions, to propose a similar toast, and he had noticed that a feature of the most prosperous associations was the holding of an annual dinner. It was remarkable how those little social functions acted in bringing men into closer relationship and in widening their circle of friendships and interests. The result was of inestimable benefit both to the individual member and to the division. It was a pleasant feature that they extended their invitations to the ladies, because they always brightened up those functions and rendered them much more enjoyable. (Cheers.) The South-Eastern division was one of the younger associations, but it was one which carried a great deal of weight with the "National," because its members were an enthusiastic body of men, who undoubtedly had the interests of the profession at heart. Moreover, they had a Secretary who was following in the steps of their former Secretary, Mr. Toope, in taking a lively interest in bringing forward the position and remuneration of veterinary inspectors. There was no doubt that that was one of the questions which was agitating the mind of the profession at the present time and it was a matter which the "National" had in hand. He had received recently details of the payment of the inspectors of fifty County Councils and other Local Authorities. He had summarised them, and they would shortly be put before the Veterinary Inspectors' Committee. He therefore hoped to be able, at a later date, to submit a minimum scale to them which might be adopted by the whole country. In that matter credit was very largely due to Mr. Toope and to Mr. Hogben, inasmuch as the South-Eastern was the first division to take the matter up seriously. If a Society was to prosper it must keep alive and the best way for it to do that was to interest itself in some such matter of current interest as that to which he had referred and also to increase its membership. It was the duty of every member to let his neighbour know something of the benefits that might be obtained by joining such an association such as that. (Hear, hear.) They had heard that day a proposal for the extension of their area—he hoped it would be successful. Their sister society, the Southern Counties had fallen upon somewhat unfortunate days, he regretted to say; it was not in the position of a little time ago, when he remembered a meeting attendance of 78. At the present time the men of Sussex and Surrey had practically no meetings to attend except those of the Central Division in London, and he thought their project should and would meet with a good response; if he might suggest it, Reigate would, he thought, make a useful centre for their activities. It only remained for him to ask that they would all do their best to support one of their members, Professor Buxton, who was Chairman of the Provisional Committee, in his work in connection with this year's "National" Congress at Cambridge. He trusted that every member of that division would do his best not only to attend the Congress himself, but to bring

his wife and daughters, to make the occasion another "record." Last year the attendance reached 225 at the annual dinner, and he hoped that this year it would top 250. (Cheers.) They would remember that at last year's dinner they were anxious to pay a little compliment to their Secretary who, however, was not in the room to receive it. He desired therefore when coupling with the toast the name of their esteemed President (who was entering on another year of office), to add that of their most painstaking Secretary, Mr. Hogben. (Cheers.)

The PRESIDENT, in the course of his reply, said that Mr. Livesey, as those of them who had been there before would know, took a great interest in that Association, and he was sure they were very much indebted to him for the assistance he gave them from time to time. Whenever they wanted to get "behind the scenes" at all, they went to Mr. Livesey, who was always willing to help them. They very much appreciated all the nice things he said of them each year. They needed all his support because although they were, as he said, a very live association, a good deal of the work hinged upon just a few. They hoped, therefore, that all the practitioners in the area covered, or about to be covered, by the Association would take the hint and show a live interest in its work. They had earlier in the day been considering the matter of extending their area and he hoped that they would not be looked upon by neighbouring divisions of the "National" as "poachers" in any way, but it was certainly for them to expand. They were cornered in the South-East part of England and they must go further afield for their members. There were a great many practitioners in that part of the country whom they hoped to tap who were "orphans of the storm"—they belonged to nobody. They hoped they would now come in and he was sure the Council would readily grant them one meeting a year in their area. They themselves had had something of a storm to weather during the year, two of their meetings having been seriously affected through the expected subjects for operations and demonstrations failing to materialise, but they had won through with unimpaired enthusiasm, and they hoped those unfortunate experiences would not prevent members coming forward to provide them with interesting and instructive meetings. He was very glad that the proposer of the toast had coupled the Secretary's name with that of the President's. He thanked them all for their attendance there that night and for wishing them success. (Cheers.)

Mr. H. P. HOGBEN, the Hon. Secretary, who also responded, thanked the proposer of the toast for the compliment he had paid him in coupling his name with it. In regard to the work attaching to the secretaryship of a division, a great deal depended upon others. They had had a most excellent Secretary in Mr. Toope, who gave the Association such a start as few men could have done. The support of the members had always been accorded him and they had

(*Continued at foot of next column.*)

NOTES AND NEWS.

The Editor will be glad to receive items of professional interest in these columns.

Diary of Events.

Mar. 19th—Annual General Meeting of the Western Counties Division at Exeter.
April 1st—Annual Fee of £1 1s. 0d. due to R.C.V.S.
„ 2nd—R.C.V.S. Committee Meetings: Examination 11 a.m., Registration 2 p.m., Parliamentary 4 p.m., Special Sub-Committees Meetings.
„ 3rd—R.C.V.S. Committee Meetings: Library 11 a.m., Finance 12 noon. Council Meeting 2 p.m.
May 7th—Last day for Nominations for election to Council R.C.V.S.
„ 21st—R.C.V.S. Voting Papers and Annual Report issued.
„ 28th—R.C.V.S. Voting Papers to be returned.
June 4th—R.C.V.S. Annual General Meeting. Earl Haig to attend to receive Diploma of Honorary Associate.

At the interview on the 27th February, outlined in our last issue, the Secretary for Scotland definitely refused to continue the Grant for the Glasgow Veterinary College, but undertook to hear representations as to the need of money to enable the contract with the students to be carried through to the end of the College year.

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Dr. Whitehouse states that local sympathy is very strong, and expresses the opinion that sufficient support will be forthcoming to maintain the College as it is at present run. He has some hope that sufficient money may be promised to allow the College to affiliate with the Glasgow University.

(*Continued from previous column.*)

always been ready to overlook faults. Their one defect, as members, was the false modesty which rendered them reluctant to give papers (laughter), but, seriously, that was a defect which it was more than ever essential should be overcome if they were to enlarge their borders. (Hear, hear.) He appreciated very highly the remarks of Mr. Livesey, and he felt that the members of the South-Eastern Division should make every endeavour to attend the Annual Meeting of the "National," which was now coming down their way. He thought they should see to it that the Southrons should not be beaten by the Scots. (Hear, hear.) He hoped that Association would do everything possible to make that Congress a great success, so that Mr. Livesey would be able to say even nicer things about them next year.

The toasts of "The Ladies" and "The Guests" were also honoured.

During the evening, Miss Violet Godfrey, Mr. Owles and Mr. Sleddall entertained the company with musical contributions which were greatly appreciated.

H. P. HOGBEN, Hon. Secretary.

A big Public Meeting is to be held, on the 25th inst., at which Lord Provost Montgomery of Glasgow will probably take the Chair. This meeting will give the public bodies who are friends of the College an opportunity to let the College Authorities know how far they are prepared to go in their support.

Milk and Dairies Act.

Among the questions put in the House of Commons on March 5th, and not answered orally, the following occurred :—

The Earl of Dalkeith (Roxburgh and Selkirk) asked the Secretary for Scotland if he was in a position to say whether it was proposed to postpone the bringing into operation of the Milk and Dairies (Scotland) Act, 1914; and if not, whether any decision had yet been arrived at as to the appointed day on which it is to be brought into operation.

The Secretary for Scotland writes :—The reply to the first part of the question is in the negative. It is proposed to bring the Act into operation on the 1st September, 1925.

Horse Export Inquiry Committee.

In a written reply to Mr. Robert Morrison, Mr. Wood, the Minister of Agriculture, states that the *personnel* of the committee to inquire into the export of live British horses to the Continent for butchery purposes is now complete. The committee will consist of the following :—

Major J. W. Hills (chairman), Sir Merrik Burrell, Lady Emmott, Vice-Admiral Sir Guy Gaunt, M.P., Lord Haddington, Mr. E. A. St. Aubyn Harney, M.P., Mr. Arthur Hayday, M.P., and Major F. T. G. Hobday. Mr. H. H. Miller will act as secretary of the committee.

Sale of Poisons.

Additions to the Schedule.

Approval has been given by the Privy Council to a resolution of the Pharmaceutical Society, the effect of which is to authorize a number of alterations in the list of poisons which no chemist or licensed person may sell without requiring the buyer's signature and complying with other formalities.

Hitherto preparations of arsenic, except in the form of medicinal preparations, have not been in Part 1 of the Poisons Schedule; that is to say, their sale has not been subject to the same rigid restrictions as other deadly poisons like strychnine, aconite, and belladonna. Under the new regulations, vendors of such compounds as weed killers and sheep dips containing arsenic will be able to effect a sale only to persons who are known or introduced to them; they will be required to enter each transaction in the "Poisons Book," and obtain the signature of the purchaser. The main object of this is to make it more difficult to obtain arsenic for criminal purposes and easier to trace the purchase of a poison in the event of a crime being suspected. The regulation has been made on representations of the Pharmaceutical Society, which arose in the first place out of the disclosures in a celebrated criminal trial.

The sale of preparations of tobacco used for agricultural and horticultural purposes will be subject to the same conditions. Another important alteration is the deletion of the word "vegetable" from the entry "vegetable alkaloids" in the schedule. The effect of this will be to restrict the sale of poisons which are now made, or may in future be made, synthetically. For instance, the sale of synthethic substitutes for cocaine has hitherto been unrestricted. Other additions to the list are Indian hemp, well-known as the basis of hashish; and the poisonous constituents of foxglove.

Transit Fever in Cattle.

At a meeting of the Aberdeen County Executive of the National Farmers' Union of Scotland, held in Aberdeen, on February 21st, reference was made to the heavy loss sustained by the death of Irish cattle from "transit fever." The general view was that those lung troubles amongst cattle were chiefly caused by the inadequate boat accommodation. The question was remitted to a sub-committee, with Mr. Maitland Mackie as convenor, to meet the veterinary representative of the Ministry of Agriculture and representatives of the North of Scotland Veterinary Association to arrange future action. Mr. Mackie said the matter was already in the hands of the Ministry of Agriculture for Ireland.

Personal: Mr. C. A. Squair, M.R.C.V.S., of "Ardencraig," Somers-road, Reigate, has taken into partnership Mr. D. Torrance Reid, M.R.C.V.S.

Obituary.

Mr. Percy Hoyland, M.R.C.V.S.

The death took place early on February 20th, at his residence, Chatham Street, Rotherham, of Mr. Percy Hoyland.

The deceased gentleman, who was 50 years of age, was educated at the Rotherham Grammar School, qualifying as a veterinary surgeon at the College, London. He was then taken into partnership with his father, the late Mr. E. J. Hoyland, who died ten years ago. Mr. Hoyland was well known, the business being the oldest of its kind in the town. During the war the deceased took charge of the practice of Mr. Geo. Green, M.R.C.V.S., who was on active service.

The news of Mr. Hoyland's sudden death came as a shock to his many friends. He leaves a widow, one daughter and a son.

Mr. W. Hutchinson, M.R.C.V.S.

The death occurred, on February 27th, of Mr. William Hutchinson, M.R.C.V.S., of Spring House, Great Eccleston, who was one of the best known veterinary surgeons in North Lancashire, and up to his death controlled one of the largest practices in the North of England.

The deceased, who was in his 75th year, was closely identified with movements designed for the benefit of

agriculture, and a few years ago succeeded to the Chairmanship of the Great Eccleston Agricultural Society, following the death of Mr. T. A. Crook, J.P., Inskip. He was keenly interested in light horses, and his services were often called upon to judge these classes at agricultural shows.

It was largely as a result of his initiative that the Great Eccleston Shire Horse Society—which has done much to make the district one of the most important Shire-growing areas of the Fylde—came into being; and in many other ways he gave much of his leisure to the agricultural community.

His activities were not limited solely to one particular interest, and he was proud of being one of the original members of Great Eccleston Cricket Club. For fifty years he had been a member of the choir at Copp Church, and had also held several offices in the church. He is survived by a widow, three daughters and one son.

BIRTH.

MILLS. February 19th, at Eagle House Nursing Home, Woodford Green, the wife of Captain J. J. Mills, R.A.V.C., a son.

ERRATA.

It is regretted that, owing to a misunderstanding, Mr. W. W. Lang was announced, in our report of the Lincolnshire and District Annual Meeting published last week, to have been re-elected President of the Division. Mr. H. Caulton Reeks, F.R.C.V.S. was voted to the chair for the coming year.

In the second paragraph of Mr. F. T. Harvey's letter on Lead Poisoning in cattle, page 197, for Raie read Rare.

CORRESPONDENCE.

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The Editor does not hold himself responsible for the opinions of his correspondents.

Utilization of Diseased Animal Products.

TO THE EDITOR OF THE VETERINARY RECORD.

Sir,—I thank Mr. Brennan de Vine for taking up this subject. I may say that I agree with his remarks on rendering innocuous, by sterilization, diseased animal products before utilizing them as food either for pigs or poultry, or even mankind.

But would it not be more economical to exterminate tuberculosis swiftly from our herds than to have diseased animal products which require to be sterilized?

I have no doubt that if the medical profession were unanimous and brought prominently before the notice of the community the grave danger it was running in permitting tuberculosis to exist in our herds, it would pay the price of its extermination, rather than allow tens of thousands of children to die annually or to be rendered cripples, maimed or chronic invalids.

History teaches us that we have never yet cleared these islands of any epizootic without the ruthless application of the pole-axe—a method that has already been in existence over 210 years. This treatment has always proved itself more economical than all the "quack" or scientific methods or remedies adopted or suggested to cope with any exotic malady, as is tuberculosis and as was glanders.—Yours faithfully, HENRY GRAY,

Kensington,
March 7th, 1925.

Definition of a "Quack."

TO THE EDITOR OF THE VETERINARY RECORD.

Sir,—Seeing that "quacks" and "quack medicine" are often discussed at different veterinary meetings, I thought that the definition of a "Quack" by the late Sir John Gibson, Editor of the *Cambrian News and Welsh Farmers' Gazette*, Aberystwyth, would be acceptable to some readers of the *Veterinary Record*. This definition appeared in the *Cambrian News* many years ago, a cutting of which I still retain.

A QUACK.

"A quack is a person who pretends that he can do what he cannot do, especially in the realm of disease. A quack is an angler who lands fools. A quack is a rogue who battens on ignorance. A quack is a bastard and fraudulent imitation of something else."—Yours faithfully, EDWARD MORGAN.

Venezuela.

Liver Fluke in North Wales.

TO THE EDITOR OF THE VETERINARY RECORD.

Sir,—I feel that the attack upon the work of Mr. R. F. Montgomerie, the Veterinary Adviser at Bangor University College, which Mr. Howel V. Hughes made in his letter, published in your issue of the 28th ultimo, is quite unjustified and entirely uncalled for.

I naturally do not know what Mr. Montgomerie said at the meeting of the Rhyl and District Branch of the N.F.U. Mr. Hughes speaks from information obtained from daily newspapers, and I wish to say at once that what was published could do me no harm in my practice. It may have done a great deal of good.

I particularly wish to draw attention to the third paragraph of Mr. Hughes' letter, and to the phrase "for male shield fern is not a new remedy in North Wales." It is true that liquid extract of male fern has been associated with the treatment of liver rot in sheep for several years, but to no useful purpose. I had no information as to dosage and methods of administration, but had made unsuccessful attempts to treat affected sheep with this drug. I know that I was not the only veterinary surgeon in North Wales who was in this position. It was not until Mr. Montgomerie made me aware, in the private reports he has circulated of the lines on which he was working, that I was able to use the drug successfully. Since then I have treated, with excellent results, over 3,000 sheep. My success is due to the work done at Bangor, and I wish to acknowledge my appreciation and thanks to the Veterinary Adviser, whose movements within my district have been very "professional."

Far from depriving me of income, his activities, resulting in the prevention of serious loss, have altered the financial outlook of many farmers in this district.

The work carried out on this problem alone has, in my opinion, justified the appointment, and, the more serious loss from sheep diseases which occurs in this country can be prevented, the more readily will the practitioner receive payment of his bills.—I am, sir, yours faithfully,
OWEN THOMAS.

Llanerchymedd, Anglesey,
March 10th, 1925.

The Editor acknowledges the receipt of communications from the following:

Messrs. F. T. Harvey and W. S. Stevens.

Report of the West of Scotland Division Annual Meeting at Glasgow, from Mr. G. W. Weir, Hon. Secretary.

National Veterinary Medical Association of Great Britain and Ireland, Limited.

EDITORIAL OFFICE: 10 Gray's Inn Square, London W.C.1.

Cheques should be made payable and all communications sent to the General Secretary at the Offices of the Association, 10 Gray's Inn Square, London, W.C.1.